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THE Supreme Court of the United States, in refusing to approve of the distribution of the controlling stock of the Southern Pacific to Union Pacific stockholders, has used a blunt, common sense kind of reasoning that we have learned to associate with the decisions of this court that is in sharp contrast to the popular conception of the complexities of the highly trained legal mind. The court in the Union Pacific case says that "the ultimate determination of the affairs of the corporation rests with its stockholders and arises from their power to choose a governing board of directors." In theory, this was equally true in the Standard Oil case. If a certain group of men owned a controlling interest in the Standard Oil Company of New Jersey stock, and subscribed pro rata for their proportion of stock of each of the Standard Oil subsidiaries, under the plan of dissolution approved by the Supreme Court, this same group could elect a board of directors for each one of the sub-

sidaries which would carry out their policies. In the case of the Standard Oil Company, however, while this possibility existed in theory, the court was not of the opinion that it constituted a practical danger, and it is probable that most business men would agree with the court. It was not at all inconceivable that different individuals could gain control of different subsidiaries of the Standard Oil Company of New Jersey. On the other hand, the Supreme Court says in regard to the distribution of 46 per cent. of Southern Pacific stock to Union Pacific stockholders that "after such distribution as is now proposed, stockholders of the Union Pacific Company may dominate and control not only the Union Pacific Company, but the Southern Pacific Company as well," and that "this transfer . . . will not so effectually end the combination as to comply with the decree heretofore ordered to be entered by this court."

OF course, Southern Pacific stock could not be distributed to Union Pacific stockholders without substituting for this stock some other security—collateral or cash—under the Oregon Short Line bonds, which are at present secured by S. P. stock and some other investment stocks, unless the Oregon Short Line bonds were retired. In a published analysis of the effect of the Supreme Court's decision in the Union Pacific case, F. J. Lisman & Co. have brought out two quite interesting circumstances bearing on the case. They point out in the first place that the Union Pacific would hesitate a long time before retiring a 4 per cent. bond issue at par or at a premium, since in such a transaction the railroad company would be an inevitable loser. The company could not, in the present state of the bond market, issue securities to raise new capital for improvements, etc., on a 4 per cent. basis. On the other hand, the bankers' analysis points out that if the Union Pacific route from Omaha to Ogden is competitive with the Southern Pacific from New Orleans to San Francisco, the Central Pacific route from Ogden to San Francisco appears to be competitive with the Southern Pacific's New Orleans to San Francisco line. In other words, if the Union Pacific and Southern Pacific compete, so do the Central Pacific and Southern Pacific. The Southern Pacific owns the controlling stock of the Central Pacific. The suggestion is obvious that the situation can be met without the retirement of the Oregon Short Line 4's by an exchange, on some equitable basis, of Central Pacific stock for Southern Pacific stock. There is a further point that has not been generally discussed that deserves mention—regardless of what is done by the Union Pacific with its Southern Pacific stock, the Southern Pacific will still be a heavy debtor to the Union Pacific. On June 30, 1912, the Southern Pacific owed the Union Pacific \$12,000,000 on demand loans, and in addition the Union Pacific owned \$26,017,000 bonds of the Southern Pacific.

WE note with much regret the resignation of F. G. Athearn as manager of Bureau of Economics of the Southern Pacific. Mr. Athearn did not have a big title; but he is a very able man and was doing a very important work. As manager of the Southern Pacific's bureau of economics he labored zealously and effectively to establish better relations between the road, on the one hand, and its patrons and employees on the other. Being an educator—he maintained a connection with the University of California and also had charge of the Southern Pacific's student employees' course of study—his methods in dealing with patrons and employees were educational in the best sense. He sought to give the company the public's point of view and to give the public the company's point of view. He constantly furnished the press with a large amount of real news about the Southern Pacific, and in a single year he made 108 speeches on railway affairs, a great majority in California. Recently when a referendum on several railway measures was taken in Arizona Mr. Athearn, under the direction of President Epes Randolph of the Arizona Eastern and the Southern Pacific Lines in Mexico, conducted a campaign on behalf of all the railways against the measures with such effect

that 40 per cent. of the voters voted against them; and they probably would have been defeated if the campaign had lasted a little longer.

THERE are, roughly speaking, two theories regarding the way the public relations of railways should be handled. Many men still think that the policy of seeking more or less secretly to manipulate and dominate politics is the only effective means of protecting large corporations against the attacks of demagogues and strike legislators. Many other persons, including most of those now prominent and influential in the councils of American railways, think that these methods are not only intrinsically wrong, but that they have forever lost their effectiveness, and that the only means by which railways can hope to establish and maintain in future satisfactory relations with the public and regulating bodies is, first, to try to give the public everything in the way of service and rates to which it is entitled, and, second, to seek, by the dissemination of literature on railway subjects and by public appearances of their responsible officers before railway commissions and legislative committees to so educate the public and the regulating authorities regarding railway affairs that they will be disposed to give the roads a square deal. Mr. Athearn is one of those who oppose attempts at political manipulation and favor educational methods. The experience of the past five or six years shows that, regarding the matter from a purely practical standpoint, those who advocate these methods are right. The special committee on Relations of Railway Operation to Legislation has used no other methods; and it has done the most effective work ever done on behalf of American railways regarding public regulation. That these methods have not been more extensively and effectively used has been partly due to the fact that there are still many men of influence in railway affairs who have shown and still show incapacity to adapt themselves to the conditions that have developed in recent years. If Dr. Osler's prescription could be followed and a large number of these gentlemen could be quietly chloroformed the immediate future of the railways would be greatly improved. Another reason why educational methods have not been more extensively and effectively used is that the number of men adapted to using them who have been developed is inadequate. Mr. Athearn is one of these men; and it is too bad that when so few of them have been developed any of them should be leaving railway service. When a nation or any kind of business sorely needs a particular type of men in its service, and it cannot get them, or cannot keep them after it does get them, it is evident that there is something wrong with its organization or management. The railways of the United States have developed innumerable good and many great executives; but in handling their public relations, and in developing and keeping men capable of handling them, they have quite commonly exhibited a very remarkable quality of ineptitude.

WHILE the orders for rails placed during the past few weeks probably have not exceeded those of similar periods in recent years to the extent which those for cars and locomotives have, they are unusual for their size at this season of the year. Most of the larger roads have now placed their orders for the major portion of this year's requirements, although supplementary orders will undoubtedly be given when the needs and the business prospects for the year are more definitely determined. The orders already placed are much heavier than those of the same roads for previous years and are nearly double those of last year, indicating that the railways are spending more for maintenance this year than previously, and that they are turning their attention to the deferred maintenance as fast as their earnings will permit. The order for 200,000 tons of rails representing an expenditure of approximately \$6,000,000 given a few days ago by the Harri-man Lines, is indicative of the amount of money which is being spent for this one item, for while the order is probably the largest individual order so far, other systems are making pur-

chases equally as large in proportion to their mileage. Aside from the size of the orders, the early placing of them is unusual and the proportion of the season's requirements placed on January 1 far exceeds that of former years. Last year the ordering of rails had scarcely begun at this time and the roads did not enter the market actively until early spring and summer. Contrary to the general rule, there has been no period of dullness this year between the completion of the 1912 rolling and the beginning of work on the 1913 requirements. Even then it will be impossible for the mills to roll all orders promptly and deliveries will be slow, in spite of the fact that they are exerting every effort to keep up with the output and are establishing new records in several instances. The anticipation of late deliveries has undoubtedly been a primary reason for the early placing of orders, but at the same time they would not have been placed had the railways not been optimistic regarding the outlook for this year. Another interesting feature connected with the orders placed so far is the increasing use of the new specifications of the American Railway Engineering Association. As these specifications were not formally adopted until the annual meeting in March of last year, it was too late for many of the roads to incorporate them with their orders, although the Rock Island and Wabash did adopt them for their 1912 orders. Among other roads adopting them this year with slight modifications in some instances are the Baltimore & Ohio, the Louisville & Nashville, the Erie, and the Atchison, Topeka & Santa Fe, so that the tonnage of rails rolled under these new specifications this year will far exceed those of last year.

THE COMMISSION'S DECISION ON WESTERN CLASSIFICATION NO. 51.

AFTER having suspended Western Classification No. 51 since February 15, last, the Interstate Commerce Commission has issued its opinion and report, a synopsis of which appeared in last week's issue, ordering the carriers to revise it and direct the future development of classification in accordance with the views expressed therein. The importance and detail technicality of the varied issues passed on by the commission in a report of over 100 pages preclude any satisfactory estimate of the effect on the classification as a whole. It would seem that the carriers have been sustained on the larger proportion of the items reviewed, but on the other hand, it is apparent that a great deal of the work that has been done looking to uniformity of classification will have to be done over.

That the commission has at least had an abundant opportunity for recognition of the magnitude of the task is indicated in Commissioner Meyer's opinion. The number of changes in No. 51 against which protest had been made was estimated at from 1,500 to 2,000 out of the thousands of items involved. After nearly a year of investigation he says, "Where the number of changes is as great as is involved in this one proceeding, it is apparent that no body of men can in a relatively short time give such consideration of each item as will enable them to express their conclusions with reference to each with that degree of confidence as to their correctness that would be desirable." Therefore, the commission says that it will hold itself in readiness to modify any of its conclusions or suggestions as soon as sufficient reliable information making such modifications just and proper may become available.

Undoubtedly one of the most significant features of the report is the declaration by the commission as to the necessity of affording wider publicity and fuller public hearings in connection with the future development of classification, and the recommendation that the classification committee submit proposed changes in smaller installments, giving ample public notice of hearings to interested parties, and inviting representatives of the interested state commissions and of the Interstate Commerce Commission, to participate in all such hearings with a view to avoiding in the future such unwieldy proceedings as the recent investigation.

The commission says that in recent years there has been a tendency toward greater publicity in classification matters, and since the investigation was instituted the carriers have invited the Interstate Commerce Commission to send a representative to classification meetings. This should silence the critics who have attempted to surround all classification procedure in the minds of the public with an idea of mystery because the work has been done by representatives of the railways alone, taking no note of the fact that the shippers have been given every opportunity to furnish information and to state their views. The presence of a representative of the commission should give assurance that public rights are not disregarded.

It has become quite common for railway officers to suggest that various perennial controversies be referred to the Interstate Commerce Commission for arbitration, and the railways have got beyond the idea that they can settle such important questions as those involved in the making of rates and classification entirely among themselves. There is room for grave doubt, however, whether the participation of state commissioners would not operate to make an unwieldy proceeding of every item in the classification, to the extent of seriously interfering with the obtaining of satisfactory results within a reasonable time.

State commissioners are notoriously, perhaps necessarily, advocates of sectional views. A classification, and particularly one covering many roads, and a large territory, must be based on considerations of the requirements of commerce as a whole. The entire proceedings during the commission's investigation have demonstrated for the hundredth time that most of the difficulty encountered in all classification work arises from the impossibility of reconciling the selfish viewpoints of individual and sectional interests with the welfare of the entire shipping public, to say nothing of the requirements of the carriers.

The commission apparently intends to see that future work on classifications shall proceed in accordance with certain more definite principles than have prevailed in the past. This is seen in its suggestion that in future items or groups of items be published as fast as they are disposed of by the classification committee, and that a record be made which may form the basis for an investigation by the commission. It is extremely doubtful if the necessity will ever arise for the suspension of an entire classification at one time again.

BOX CAR DESIGN.

A VISIT to a large freight car repair plant, and particularly to that part where the greater proportion of the box cars are repaired, is most instructive. From the maintenance standpoint the greatest difficulty has undoubtedly been caused by troubles with the draft gear, and this largely because of the manner of fastening the gear to the draft sills and the lack of strength in the sills themselves. On the more modern cars with steel underframes the trouble has been quite largely overcome, especially in cases where draft gear of larger capacity than standard has been introduced. A number of roads are applying steel sills or steel draft sills to old box cars when they pass through the shops for heavy repairs and where the condition of the other parts of the car is such as to warrant this expenditure. That the results obtained are satisfactory is indicated by the increasing numbers of such cars which are being so equipped on roads which have gone into the matter extensively.

Another weak point which is most noticeable at the repair tracks is that of weak box car end construction. The standard construction on cars built until comparatively recently was to use a light inside lining and the standard outside sheathing fastened to the wooden end and corner posts, thus making the end only a very little stronger, if any, than the sides of the car. This gave trouble in two ways—it did not provide adequate resistance to prevent the lading from bursting or bulging out the ends under the severe shocks met with in shifting the cars, or even in rough service on the road; also, combined with poor

draft gear attachments and badly designed end sills, cracks and openings developed which were responsible for considerable losses due to the leakage of grain and similar commodities. In many cases the end of the car may appear to be tight and leakage-proof when standing still, but the vibrations during transit open up the cracks and allow the grain to leak out. Many provisions have been made to reinforce the ends to prevent this. The end construction used on the Santa Fe box cars was illustrated on page 959, of the April 26, 1912, issue of the *Railway Age Gazette*. In this case a $\frac{1}{4}$ in. steel plate is fastened to the end sill and extends up under the sheathing. A heavier inside lining is used than is the common practice, and the sheathing is bolted to the frame and held by clamps. A reinforced box car end used on the Central of Georgia was described in the issue of May 10, 1912, page 1035, and the end on the Canadian Pacific cars with an outside steel frame was illustrated in the issue of May 10, 1912. A recent development which gives considerable promise is the all-steel end. Two different types have thus far been placed on the market, one in the shape of a heavy steel plate, corrugated with concentric rings; the other type used on the New York Central & Hudson River is illustrated elsewhere in this issue. The advantages of such ends are increased strength, no leakage and greater inside length of the car because of the elimination of posts, inside lining, etc.

That the side doors can be made burglar, cinder and waterproof was demonstrated in the second article in the series on "Defective Box Cars and Damaged Freight," which was published in the April 19, 1912, issue of the *Railway Age Gazette*. The past year has witnessed a marked improvement in the practice of applying side doors to box cars, both in the building of new cars and in the repairing of old ones. As in the case of box car ends there has been a tendency to develop doors of all-steel construction, although only a few have thus far been placed in service.

One of the most troublesome problems in box car construction is the roof, which should be maintained in a leakage-proof condition. Since the publication of an article on this subject in our issue of May 3, 1912, more and more attention is being given to this part of the equipment. The practice of submitting the roofs to leakage tests before assigning the cars to certain classes of service has been given more consideration, as has also the realization that the railways must do their part in systematically attending to the maintenance of the roofs, if satisfactory results are to be obtained. There is also a tendency to place the different types of roofs in comparative service in new orders of cars and in sufficient numbers of each kind to permit of a fair comparison being made. The stresses to which a box car roof is subjected, even with the strongest of framing in the body of the car, are such that it must be given a reasonable amount of attention when it is placed in service, and must not be practically neglected as is commonly the case on some roads.

It is rather surprising, when we consider the comparative ease with which experiments can be made to determine the relative frictional resistance of trucks on the track, that more attention has not been given to this subject. The American Steel Foundries retained Prof. Endsley, of Purdue University, to determine the relative resistance of square and loose trucks a couple of years ago. It seemed advisable to extend the investigations made at that time still further, and the results of a second series of tests are now being made public and are presented in abstract elsewhere in this issue. They indicate that better truck construction and more attention to the mating of wheels and other details are necessary if we are to secure the best results from operation. Every effort is being made to develop as powerful locomotives as possible within the limitations of clearance and weight of the different roads. If by more attention to the car truck construction it will be possible to reduce the train resistance an appreciable amount the demands upon the locomotive will be reduced in the same proportion. It is difficult to estimate exactly what expenditure would be justifiable in improving such

conditions, but it would undoubtedly be a large one, for it would not only permit more cars to the train for the same locomotive capacity, but would probably also be responsible for a considerable reduction in the cost of maintenance of the equipment.

CRIMINAL INDICTMENTS OF RAILROAD OFFICERS.

A DOZEN railroad officers, an engineman, a brakeman and a lot of directors are now awaiting trial in Connecticut, New York and Indiana, charged with being criminals. The president of the New Haven road and the president and chairman of the Grand Trunk are accused of breaking the anti-trust law, and the others of manslaughter, or worse, in causing deaths of passengers. Mr. Mellen and the Grand Trunk officers, if they committed the crime charged, did it directly and personally, and the same probably is true of the engineman and the brakeman on the Cincinnati, Hamilton & Dayton; but in the case of all of the others the supposed crime is of a pretty shadowy nature. The legal representatives of the state propose to punish these officers and directors for misconduct or neglect which was participated in by many others; for acts, decisions or omissions which are made criminal only by legislative or judicial fiat, the real effect of which is uncertain until the lawyers have thrashed them out in court.

We do not propose to discuss the merits of these indictments, or of the laws under which they have been made; but, by way of preparing for the next stage of these proceedings it will be of interest to glance for a moment at the conditions which have led up to this unusual situation.

A grand jury is bound to find probable cause; but the members, in dealing with numerous questions of the application of statutes, must of course, be guided by the state's attorney. State's attorneys are supposed to prosecute only where they see a reasonable prospect of being able to secure conviction. But as even the Supreme Court of the United States is often said to be guided by changes in public sentiment, it is to be expected that these prosecuting officers will be sensitive to public opinion, especially where their own tenure of office depends on a popular election. And public opinion nowadays manifests itself in queer ways. In Massachusetts and Rhode Island the people (if the newspapers truly represent the people's views) desire to punish the Grand Trunk—which, surely, desires to get from those states all the traffic that it can, even at the very low rates which it must give, in competition with lines more favorably situated—for trying to find an economical way of carrying out its purpose; a way more economical than to build from 100 to 250 miles of road at a cost of 15 to 25 millions, when all of the prospective traffic must be carried at extremely low rates. In arguing against permitting the Grand Trunk to use Boston & Maine tracks Governor Foss, of Massachusetts, says: "A railroad which must create traffic over its lines to pay cost, upkeep and expenses, affords to the public the benefit of real facilities and real competition. A traffic agreement, by its terms, destroys this competition and makes sure the absence of these facilities. It leaves traffic to go, as formerly, over the existing lines, which the railroad controlling the traffic must pay for and support." In other words, to make a carrier compete energetically with others, compel it to maintain a costly and measurably useless plant.

And these New England states, aiming apparently to punish a wrong spirit rather than to secure economical transportation, seem to have convinced Attorney General Wickersham that to refrain from making a wasteful expenditure is a crime. With the Interstate Commerce Commission and five state commissions empowered to regulate rates—or, at all events, to use their ample powers of investigation, argument and criticism to expose every unjust rate—with these six semi-judicial bodies constantly "on the job," the only way that we have found to settle this purely economic question is to threaten three railroad officers, two of them subjects of the King of England, with imprisonment!

To some people the Federal indictment at New York looks as though the prosecutors were satisfied to hit anywhere, the dis-

covery and description of the essential and important offense being immaterial. The Connecticut charges against the officers of the New Haven road, in connection with the Westport derailment, are even more awry. As to the danger of short crossovers, where adequate fixed signals are provided for the protection of trains, and the culpability of officers who are slow in the construction of long crossovers, the wildest anti-corporation lawyer would scarcely think of calling such officers criminals—except for the benefit of the galleries. Failure to make passenger cars fireproof, or to provide a larger force of trainmen or porters, may be things for which a railroad management deserves to be called to account, but, if prosecutions for manslaughter are the proper instrumentality by which to do this, the lessons of the past must be all wrong. The cause of the Westport derailment was the failure, incompetence, mistake, neglect or sickness of the engineman. Insofar as the selection, promotion or discipline of the engineman had been improperly managed some officer or officers should be held to account. But to get at the real issue by prosecuting Messrs. Horn, Pollock and Woodward as criminals, to the exclusion of other officers, is as illogical a dragnet proceeding as could be imagined.

The indictments against the officers and directors of the Cincinnati, Hamilton & Dayton are based on the alleged neglect of the company to comply with an order of the railroad commission to install automatic block signals; but since the action of the prosecutor it has been discovered that there was no such disobedience. Chairman Wood of the railroad commission has made public the orders issued by the commission relative to the installation of block signals on the road, and they show that the commission approved the manual block system in use on the line between Glenwood and Indianapolis until January 1, 1913.

But the point is that the block-signal order is not the real issue. With the improvement of the block signal system, probably this switch at Irvington would have been provided with additional safeguards; but misplaced switches sometimes cause trouble on lines equipped with automatic block signals. Should the settlement of the question whether a certain improvement shall be completed in 12 months or in 18 months decide whether or not a railway director should go to jail? The trial of the engineman and brakeman who are held responsible for leaving the switch wrong may make clear the whole situation in connection with the Irvington collision; but from the reports thus far published it appears that the neglect of the passenger engineman to watch for a switch light was a main element in the cause. This kind of neglect is not curable by prosecuting directors or officers for manslaughter; at least all efforts in that direction in the past have failed. It would seem to be the part of wisdom to try some other plan. Possibly the Indiana authorities have taken their present action because it is so popular nowadays to aim at the men "higher up," and because some of these men are so far away.

The present attitude of these public officers in New England and Indiana, and at Washington, is commendable in its purpose to put responsibility on the actual heads of the railways. The state should reach subordinates through the heads. Punishment of enginemen, conductors and brakemen in the criminal courts is very unpopular, to say the least. But if the state's control over the regulation of railroad tracks, switches and signals, and the management of difficult problems in discipline, cannot be exercised in any better way than by instituting these criminal prosecutions, the fact is a grave indictment of our whole scheme of railroad commissions. It is fifty years, more or less, since the English humorist pictured a railway director chained to the front end of the locomotive of an express train, as his idea of the way to prevent train wrecks; and it does not look as though that theory had made any progress, whatever, in the intervening half-century. The prosaic and sane but persistent inquiries of the Board of Trade into railway operating questions, combined with the policy of holding the railways to rigid financial responsibility, are the instrumentalities to which the English attribute the

great progress which has been made in that country in railway safety.

And, while the prosecuting attorneys are engaged in these erratic efforts in the criminal courts to promote the public good, the Interstate Commerce Commission, two and a half years after it received authority to investigate train accidents, presents in its annual report only one positive recommendation affecting safety, that calling for the requirement of the block system by law. (The recommendation that all passenger cars be made of steel is in the right direction, but the commissioners realize, as does every one else, that in this matter the government cannot do much; progress already is as rapid, probably, as it should be.) The rest of that part of the report dealing with safety is made up of generalities, and declarations of truths already well known.

NEW BOOKS.

Shop Notes. Edited by H. H. Winsor. 208 pages. 6½ in. x 9¼ in. Illustrated. Bound in paper. Published by *Popular Mechanics*, Chicago. Price, 50 cents.

This is the ninth annual year book of the *Popular Mechanics Shop Notes* and is a collection of the articles published during the past under that head in the monthly edition of the magazine. It includes 595 easy ways of doing things in the several trades. The items are all original and are simple in construction, making it possible for a handy amateur to duplicate them. A complete index is given in the back of the book.

Diary of a Roundhouse Foreman. By T. S. Reilly. Bound in cloth. 158 pages. 5 in. x 7 in. Published by the Norman W. Henley Company, 132 Nassau street, New York. Price, \$1.00.

The book is published in the form of a diary and gives in colloquial form the experiences and trials of the engine house foreman. The hero of the story is a young college graduate who is serving his apprenticeship and has endeavored to push his way to the top. Many suggestions are given for the diplomatic handling of men.

Density and Thermal Expansion of Linseed Oil and Turpentine. By H. W. Pearce, Assistant Physicist, Bureau of Standards. Technological Paper No. 9. Published by the Bureau of Standards, Washington, D. C.

This pamphlet has been prepared in response to a demand for a more complete knowledge concerning the physical properties of linseed oil and turpentine. Samples were taken from various manufacturers in different localities throughout the country. The apparatus and method of procedure used is thoroughly described, together with the results obtained and comparisons with previous tests. A good deal of the information is given in the form of tables of density, weight and volume as determined from the tests.

Coal. By E. E. Somermeier, Professor of Metallurgy, Ohio State University. Bound in cloth. 167 pages. 6½ in. x 9¼ in. Published by the McGraw-Hill Book Company, 239 West Thirty-ninth street, New York. Price, \$2.00.

The information is largely based on private notes, scattered general information, technical bulletins, and original papers in technical journals. The author has endeavored to keep in mind throughout the work the mechanical and power plant engineer, the chemical engineer and chemist, and the non-technical business man who has to do with the buying and selling of coal. The work is divided into 10 chapters, the first dealing with the composition and heating value; the second with the chemical analysis; the third, fourth, fifth and sixth with the testing of fuel; the seventh and eighth with the improvement by washing and the general purchase of coal under specifications; the ninth thoroughly discusses the method and theory together with the results obtained through gas analysis by the Orsat apparatus; the tenth chapter is given over to analytical tables, giving the composition of various kinds of coal found throughout the United States. The book contains a few diagrams, clearly illustrating the various methods used in the testing of coals.

Letters to the Editor.

"BASING POINT" RATES.

LONDON, December 16, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

"One man's meat is another man's poison." It may interest American students of railway rate questions to know that in the General Manager's Report on the South African Railways for the year ending December, 1911, there is a section headed "American Rates." "There appears," it says, "to be an idea entertained by certain members of the mercantile community that the adoption of what are known as 'basing point' rates would meet the requirements of the country and facilitate its development . . . better than the present system of distribution rates."

The report gives some account of the basing point system, and of the reasons which led to its introduction in the southern states; and declares that "the sparseness of the population in this country and the long distances between points of any importance are not conducive to the adoption of basing point rates." It further states that "it is doubtful," which is at least putting it mildly, "whether small towns, not of sufficient importance to be constituted basing points, would welcome a system whereby their goods would be charged higher rates than to the basing points." The general manager concludes as follows: "The present system of distribution rates is, in my opinion, better adapted to the conditions of South Africa than the American basing point system, which was introduced to meet local conditions of a unique character."

Managers of railways in the southern states who have to defend the basing point system against assaults from outside may be interested to see that in South Africa it is the railway management that resists, and the mercantile community that demands the introduction of the basing point system.

W. M. ACWORTH.

HEAVIER LOCOMOTIVES VERSUS GRADE REDUCTION.

NEW YORK, January 6, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

From the standpoint of a stockholder and observer of railway operation I would like to make a protest against the position taken by Mr. Bloecher in the issue of the *Railway Age Gazette* of January 3, page 8. It seems impossible to believe that any one would be willing to express the opinion that grade reduction always leads to cheaper operation than increasing the power of locomotives. This I understand to be the position taken by Mr. Bloecher. As I look at this problem each division and each grade needs to be considered independently and upon its own individual merits. Undoubtedly many cases exist in which cheaper operation may be obtained by cutting off the tops of hills, while many other cases exist in which cheaper operation may be found by increasing the power of the locomotives. In the interests of the public and the owners of railroad properties I would like to appeal for an individual study, such as is suggested by Mr. Beyer in his paper which was presented in abstract in your issue of December 13, page 1145. I hope the *Railway Age Gazette* will make clear to its readers the facts concerning decreased cost of operation which has been obtained on a number of railroads during the past two or three years through the introduction of more powerful locomotives. I believe the Delaware & Hudson, the New York Central, the Virginian, the Norfolk & Western, Chesapeake & Ohio, Chicago & Alton, and many other lines are in position to supply figures and facts concerning operation which will prove the statement made by Mr. Bloecher to be altogether too general and, therefore, unwarranted. I hope to see editorial comment on this subject in the *Railway Age Gazette*.

OBSERVER.

GOVERNMENT REGULATION.

CHICAGO, December 24, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In the editorial in your issue of December 20, 1912, on "The Commission and Regulation of Operation," you make one statement which is prophetic, and that is: "And it will not be surprising if the future historian of our times writes that most of the regulation adopted hurried us along toward government ownership."

There is an excellent opportunity for the government to exercise its regulation of railways, not only to the extent of the operation, but by assuming the financial responsibilities, if it will take over either the Union Pacific or the Southern Pacific property at this time. This would be a means of carrying out amicably a ruling of the United States Supreme Court and give the government an opportunity to assume the full responsibility for the results of operation of railroad property, including the financial responsibility.

The Interstate Commerce Commission and the United States senators from each state through which the road operates should be made members of the board of directors. It is possible that by such a plan it could be developed whether government ownership is advisable, and it would also cause the Interstate Commerce Commission to hesitate in its regulations of railroads and impress upon it the due sense of its responsibilities.

L. C. FRITCH,

Chief Engineer, Chicago Great Western R. R.

TONNAGE RATINGS ON NEW AND OLD LINES.

CHICAGO, November 21, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

J. G. Van Zandt, in a letter in your issue of November 15, 1912, criticized some points in my article in your issue of August 23, 1912, on a method of finding tonnage rating for proposed as well as old lines.

The first point Mr. Van Zandt seems to object to is the use of averages. Practically all problems in economics are an application of general averages, especially in comparing two or more lines which are only on paper. We hope to find a train that will give an average performance over the line considered. The narrower the limits within which it must be worked out the more fortunate we are.

Bulletin 43 of the University of Illinois, compiled under the direction of Professor Edward C. Schmidt, is a very good presentation of the subject as applied to a given division. In so far as I am aware it is the most complete publication of the kind. But it must not be inferred from this that it is the only complete analysis of the subject, as a number have been made which have never gotten into print. Professor Schmidt's tests proved one thing conclusively, and that is that the best quality of maintenance is an economy, as it cuts down coal bills. The management of the road in question has improved the track standards, particularly as regards joints since that time. The truth of the matter seems to be that for speeds of 3 to 35 miles an hour, there will be no increase in resistance due to velocity unless the maintenance falls below a certain standard or the loading is not proportioned to the track structure. Since the days of Sir Isaac Newton it has always been customary to include a factor for velocity in all formulas if the problem involves the question of speed. It does not sound orthodox to omit it, but tests have shown that it has no place in this class of formulas for the highest degree of maintenance. In the beginning I think every investigator began looking for some function of the letter V, and was disappointed in not finding it. Tests made by D. E. Crawford on the Pennsylvania, A. C. Dennis on the Canadian Pacific, and those made on the Union Pacific which have been referred to by A. K. Shurtleff in various monographs on the subject fail to find a place for the letter V. These tests are much more numerous than those of Professor Schmidt, which included only 32 trains. They show the same fact that Pro-

fessor Schmidt does, that for maintenance that is not exactly up to par, a wide variety of results are found. The most elaborate set of tests of this kind are those which have been made by R. N. Begien on the Baltimore & Ohio, the results of which will be published shortly by the American Railway Engineering Association. These tests prove the contention that for the present style of track and equipment the velocity does not enter into the subject for ordinary freight train speeds where the best class of maintenance is found. After mature consideration, the committee on Economics of Railway Location of this association, decided that the formula given in the manual of the association is correct for the comparison of different lines and preferred to use for that purpose a value for train resistance that is found in the best present practice. In the case of these tables I think it would be found that in comparing new lines (paper locations) the ratio between them will vary but slightly even if the Schmidt formula is used instead of four pounds per ton for speeds from 3 to 35 miles per hour.

I plead guilty to having used the method of computing available draw-bar pull recommended by the association and 11,000 B. t. u. Western coal as shown in the article. My reason for doing this was that I had never been able to run a dynamometer car on a paper location. On page 350 will be found the statement that a similar method may be used on old lines for tonnage rating. This was not gone into at length, but it would undoubtedly be better to use a dynamometer car to find what a certain class of engine is capable of doing on a given division, and also to ascertain the train resistance on that engine district also. This could be done for the four reasons with profit. The figures derived from this study can then be utilized for other schedules and loadings by the construction of tables and the use of a profile and train sheets which will give the time laid out for water, coal and passing stops.

The available draw-bar pull as computed from the tables in the Manual when 4,000 lbs. per hour of 11,000 B. t. u. coal has been used has not been found to give excessive results in my experience, although I have found that available draw-bar pull figured in this manner was less than the train resistance computed by the Schmidt formula for speeds in the neighborhood of 35 miles per hour, although there were records to show the train had been actually moved.

PAUL M. LA BACH,

Assistant Engineer, Chicago, Rock Island & Pacific.

THE MASSACHUSETTS COMMISSION.

BOSTON, January 4, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In the letter recently written to you I did not go into the regulation of railroads in Massachusetts at any length and shall not now, but I would like to make it clear that the keynote of regulation through the initiative by a railroad commission is the physical condition of the property and its upkeep. On rates and fares it should not act of its own volition, but wait for complaints and petitions, and in the first instance should not have much to say on operation, excepting as affecting safety. The fact is the railroads here had for years been "milked out" right under the eyes of our board, and Mr. Mellen and Mr. Van Etten (of the New York Central) inherited these skeletons. The railroad and street railway managers have always insisted, and still do, that the board should not use its initiative, and it has always coincided. I agree that the board's decisions have been of a very high order, where it has acted, but lack of action on its own initiative, as our laws said and intended, has been the trouble, and this is what must be remedied now. A people not strong enough to enforce its laws is not competent to own or operate or manage. The governor's notion of divided management, through state directors, is nonsense; we have tried that here on several roads and it worked just as it would again. Every one of us here who knows the "inside" knows that what is needed is a strong commission compelled to obey the laws. I believe you will soon see this brought about. JOHN H. CARTER.

MECHANICAL TRANSFERENCE AT FREIGHT TERMINALS.*

Essential Principles Which a Successful System Must Fulfil
and Extent to Which Various Types Comply with Them.

By H. McL. HARDING,
Consulting Engineer, New York.

There are three great principles in freight handling which any machinery must possess to fulfil all terminal conditions. These constitute the touchstone by which any machinery should be tested to determine its value. First, the machinery itself should be able to serve every cubic foot of space which is to be utilized. Second, the machinery should do this without any rehandling by manual labor. Third, there should be continuous rapidity.

The first principle signifies that the machinery should be able to transfer and to raise and lower freight over any portion of a designated terminal space, to distribute it to designated consignment piles and to tier it. The whole space, vertical as well as horizontal, should be served.

The second principle stipulates that the load must be raised from the floor by the machinery and not by manual labor. When it reaches its destination, it must be placed upon the floor or tiered to the desired height by machine power. If two extra handlings or rehandlings are required the economy of the mechanism is lost, as each rehandling averages in cost from 15 to 20 cents per ton, depending upon the bulkiness of the freight. The familiar traveling shop crane will fulfil these first two requirements most successfully. It will raise, transfer, lower or tier anywhere within its parallel side tracks without manual labor for rehandling. Also little floor space is necessarily left unoccupied. However, there is a third condition which the shop crane does not fulfil and which is vitally essential to terminal work. This is continuous rapidity of movement without delay or congestion. By continuous rapidity is meant the following of one load after another so successively that there will be no delay at the starting point and no congestion during transit or at the receiving end. This can be best attained, or possibly can only be attained, by a threefold division of the transporting mechanism into tractors, trailers and containers. A tractor corresponds to the locomotive, the trailer to the freight car, and the container consists of flatboards, slings, nets, hooks, light trucks or even hand-trucks containing or holding the freight or articles to be transported.

By applying the above simple principles to any new proposed freight transferring mechanism, possible mistakes may be avoided. The vertical movements are often of more value than the horizontal.

FREIGHT MOVEMENTS.

Before referring to the adaptation of any type of mechanism, the terminal freight movements or operating conditions may be briefly described. At the outbound station these movements are the receiving, inspecting, assorting, scribing, starting, calling, weighing, routing, distributing, checking, stowing and re-checking. At the inbound, they are "breaking down," inspecting, checking, routing, distributing, assorting, tiering, re-checking, and later, delivery to drays. At transfer stations the movements are principally between different cars, with the inspecting, checking, routing, distributing and stowage. Often the outbound, inbound and transfer are combined at one station, with a combination of the above operations. As far as possible, transfer stations should be removed from the centers of cities where land is of great value, thereby often partially relieving the congestion at the inbound and outbound stations. At transshipment sheds, the movements are between the ship's hold or the side of the pier, to or from any portion of the pier shed and the cars or the warehouses, with the usual operations of distributing and assorting. It is often necessary to serve the

second or third floors and to open storage yards for coarse freight.

The operations of assorting and distributing are controlled by the number of consignments or separate shipments. The greater the weight of each consignment, the heavier the individual loads. In outbound freight, destination subject to classification may assist in increasing the weight of the separate loads from platform to cars, provided the weighing of individual consignments does not prevent.

The average weight of separate consignments at Boston is given at about 1,000 lbs.; at the New York Central and Erie stations in New York about 800 lbs.; at Providence, R. I., 1,000 lbs., and at Worcester, Mass., 1,600 lbs. The destination weight at Providence and Worcester doubles these weights. From figures at various freight stations it may be assumed that the average weight of miscellaneous or package freight is about 1,000 lbs. per consignment. It will be far heavier at stations where the manufactured products are of metal, as at Pittsburgh, and less where they are of wood, as at Grand Rapids. The heavier the individual consignment, the fewer the trips and the less the cost per ton.

The bulkiness of consignments, unless trailers are used, will also greatly increase the cost per ton of transference. A case of hats, 5 ft. x 5 ft. x 4 ft., weighing only 100 lbs., may occupy all the space of an individual container, necessitating twenty trips per ton. With four trailers, five trips would be necessary, costing but one-fourth.

At steamboat terminals, the weight of consignments generally averages far greater than the above. For outbound steamship freight, little or no attention is paid to consignments, the stevedore stowing according to the character of the goods—heavy material below and light material above, also, as to safety of stowage and avoidance of injury to fragile materials. Inbound cargoes must be distributed according to marks and cross-marks, and are frequently assorted not only according to the shipments, but according to the grades. In one case when the labor cost for outbound was \$0.36 per ton, the inbound was nearly \$0.40.

ASSORTING AND DISTRIBUTING.

Wherever possible the assorting should be done at the beginning of the movement, so that the distribution can proceed rapidly without interruption. As the machinery should be able to distribute to every cubic foot of space which it is desired to serve, the comparative value of different types of machinery should depend upon the extent of this cubic service, and this can be used as a unit of value. It is evident that the assorting and distributing must be performed correctly to fulfil the third principle of continuous rapidity. Tracing the movements of outbound freight may best illustrate the necessity for this third principle in mechanical freight handling.

At two outbound stations in New York City where about 700 tons of miscellaneous freight are handled by each daily, and two-thirds of this after 1 p. m., the receiving platform being in each instance less than 300 ft. in length, the operations are as follows:

As the freight is received from the dray it is assorted by the drayman, assisted by a man furnished by the railway, into separate piles on the floor, according to consignments. At one end of the platform groceries are chiefly delivered; another location is reserved for dry-goods, and others for different classes of shipments. This greatly simplifies classification. The average weight is somewhat less than 1,000 lbs. per consignment. As soon as the drayload is received, it is inspected by the receiving clerk, receipted for, placed on hand trucks, taken to the scales which are tared for the hand truck at 165 lbs., called

*Abstract of a paper read before the Western Railway Club, Chicago, on November 19, 1912.

out, routed, checked, distributed to the proper cars and stowed, after which there is the re-checking upon the return of the truckman.

In some cities, the trucker enters the cars; in others he deposits his load at the car door for the stower and immediately returns with a waiting empty truck. This latter method avoids the truckman waiting while his truck is being unloaded, and reduces the number of truckers far more than it increases the number of stowers. The movements at the inbound house are similar, only in the reverse order. In either case only one consignment, or rather a portion of each consignment, is carried per trip, the load averaging about 250 lbs., or one-fourth of each consignment.

The movements at transfer stations are simpler, there being no weighing and no transferring first to the piles, although the piling was the earlier method. Distributing may be regarded as the chief operation. At the transfer station at Mantua, where the freight was originally assorted into piles in the transfer station and then transferred to the cars, the cost was \$0.40 per ton above what it is now where the freight is trucked directly from car to car. It is not advisable to transfer to large trucks to obtain a large load, as the cost will be excessive, due to the rehandling.

When the inbound, outbound and transfer stations are combined into one, it may at first appear more complex than it is. Not only must any machinery be able to perform all the above movements to be successful, but it must accomplish them simultaneously with the greatest possible rapidity, consignment following consignment continuously, without delay or congestion.

TYPES OF MACHINERY.

The types of machinery, to which reference is here made, are those which pertain to miscellaneous or package freight, which must be moved quickly and which at present is largely moved by hand trucks. These machines consist of moving platforms, slot conveyors, portable conveyors, tiering machines, link belt conveyors, rubber belt conveyors, overhead chain and hook carriers, ramps; horse, motor, and derrick trucks; winches, elevators; cranes, such as the fixed jib crane and pillar cranes, or the movable cranes, as the gantry, walking, or traveling shop crane, transporters, overhead carriers, telfers, man-trolleys, transfers, and many others.

The general construction of the movable crane consists of a jib which can be raised, lowered and swung in a circle, a hoisting motor for raising and lowering the loads, and a traveling motor by which the whole crane can be moved. These are called gantry cranes, and are of the whole or half-arch type. There is generally a separate motor for each movement.

The traveling shop crane is not much used in freight handling, although there is a good example at the Texas City Terminal near Galveston. (See *Railway Age Gazette*, July 12, 1912.)

Applying the three principles to the platform, slot, link belt and those similar, it will be seen that in reference to package freight they fulfil the third condition as to continuous rapidity most successfully, but they fail in respect to the first condition of serving all cubic space and the second condition of rehandling. They are, however, exceedingly well adapted to moving bulk material or when the packages are of uniform size.

Winches, where there are several, may partially fulfil the third, but not the first two principles. Ramps are excellent for the purpose for which they are designed, but are not adaptable to the first two conditions, and the same is true of chutes. Overhead chain hook carriers and transporters of the usual form will also accomplish the third condition only. The traveling shop crane is a perfect adaptation of the first two principles only. The traveling half-arch gantry, as well as other movable jib cranes, are excellent within a very limited range for the first and second principles at certain steamship terminals. As to many of the other types, the principles can be readily applied without experiencing any difficulties. Floor space should not

be occupied for freight transference where it can be avoided.

Attention is called to the latest types, especially those used at German and English terminals. These devices consist in overhead trackage and transferring and hoisting machinery. There are two leading types which will be described. The power is electricity, preferably of direct current of 250 or 500 volts. In one type, the overhead tracks consist of an I-beam supported from the structure of the building, or if outside, upon bents. Upon this I-beam, with an intervening strip of wood between, is placed a T-rail upon which the conveying mechanism travels. In the other type, the rails are placed upon the lower flanges of the I-beam; although this type has many uses, it is somewhat more difficult to serve the whole area between the fixed side tracks.

The whole of the main side-trackage in the sheds is fixed in a permanent position; but the cross trackage is fixed or movable, being attached to a traveling crane when movable, and is so arranged that the hoisting and transferring mechanism can pass from any point of the fixed side tracks to the movable cross track, and then upon the fixed track on the other side, and thus complete the circuit of the movements.

At the rear or sides of the buildings, the overhead track is in the form of a fixed closed loop which connects the different sheds and warehouses. By means of this loop the car platforms and open space to the rear of the sheds and warehouses can be served. Coarse freight and barrels can be placed in this area, and freight can be transferred between the stations or vessels and the cars.

This conveying mechanism consists of a transfer-tractor which draws after itself from one to four trailers, each trailer supporting an electric hoist. This transfer-tractor constitutes the traveling conveying mechanism, having a speed up to nine miles an hour with its complement of trailers and six tons of freight. It is controlled in the same way as an electric trolley car, by a transfer man in the transfer-tractor cab operating a drum controller, the current being taken by a contact wheel from a wire or other conductor located parallel to the track in the most convenient location, or in some special cases by a storage battery attached to one of the trailers.

Each trailer has suspended beneath it an electric hoist, which might be called a traveling electric winch. It has all the functions of the winch except that it is movable. The normal load of each hoist is two tons at a speed of 60 ft. per min., with a reserve capacity of 50 per cent. Two hoists combined can lift four tons. One ton would be hoisted at a speed of approximately 120 ft. per min. The three hoists would, therefore, have a combined capacity of six tons, not including the reserve. The hoists are also equivalent to traveling elevators. This conveying and hoisting machinery contains no new mechanism, and can be furnished by a number of manufacturers. The transporting machinery consists of two essential features—one mechanism which conveys, and another which hoists, and this mechanism is able to transfer the freight with one conveying movement.

Unless it is too large, each hoist takes only one consignment, so that there are at least three or more consignments hoisted and conveyed at a high rate of speed. All of these are under the charge and direction of one transfer man; and also as the goods are already assorted as described at the outbound platform, no later assorting or only a limited amount will be necessary. In order to obtain a greater load for each hoist, it often happens that there can be assembled on each flatboard or in each net, sling or other container many goods of one consignment. At inbound stations, when the goods reach their destination they are either left upon the flatboard or in slings in separate piles, according to the marks, or else are lowered, each consignment being kept by itself, upon the inbound platform if a drayman should be waiting or expected. This leaving the freight in slings has been adopted at several important terminals, so that when the load is ultimately wanted no manual rehandling will be required.

If the freight is to be delivered to cars, it is either transported directly to the designated platform of the cars, or if there are no cars to receive it, it is placed where it can be held in the containers until their arrival.

The speed of hoisting with average loads is about 100 ft. per min., and the average speed of conveying, 900 ft. per min. The average load under the usual operating conditions of separate shipments is about $1\frac{1}{2}$ tons per train, although the tractor and hoists have a normal capacity of six tons, and a total excess capacity of three tons additional, making a possible nine tons. A large consignment of many tons can be divided between the different trailer-hoists. To make a complete cycle, that is, hoisting the load about 20 ft., traveling 500 ft., lowering 20 ft., hoisting 20 ft., again returning 500 ft. and lowering 20 ft., it is estimated that about 20 trips per hour per transfer train can be made, that is, 30 tons per hour per train. Five trains would, therefore, transfer 150 tons per hour, the assorting being accomplished by means of the trailer hoists. Four times this amount can be transferred if the rated capacity of the hoists can be utilized.

The number of trains can be increased, operating upon the same or different loops, thereby attaining the greatest possible capacity. Should assorting not be necessary, as with cargoes of cement and iron, with few separate consignments or marks, this capacity per hour can be greatly increased with the same number of trains. The tracks are so laid out that the transfer-tractors and trailer-hoists can be concentrated upon any of the loops in any of the sheds.

It is essential for rapidity and to avoid congestion that the transporting mechanism should not wait for its loads, so that if the flatboard or other container be delayed, there is no loss of tractor time; also that one unit of power tractor can be attached to one or more units of carrying capacity. This gives a freedom of movement which can never be attained where each power tractor is permanently attached to its own carrying container.

COST OF INSTALLATION.

The transference overhead runway, which should be made part of the shed structure, will cost the same as the other structural steel, varying with the price of the steel. The weight, including the brackets, etc., will average about 60 lbs. per lineal foot. This steel would be fabricated at the mill and erected simultaneously with the shed or warehouse.

There are various ways of computing the cost of train and track installations. One of the most satisfactory is to figure out the cost of serving a certain number of square feet of area or cubical feet of space, including a certain tonnage to be transferred within a specified time. There is also the cost per lineal foot of connecting the areas to be served. By knowing the weight of the structural steel and its cost per ton, the cost of the trackage can be closely estimated. As the sections of a terminal are developed they will be connected by overhead runways, so that the same transfer tractors and trailers can be used upon different sections.

Although the cost of transferring freight will largely depend upon its character, that is, upon the relative proportion of its bulkiness to its weight, the actual cost of hoisting and transferring should not average more than six cents per ton for a complete cycle. This does not include the expense at each end of each movement before the hoist hook is attached, and after the load is deposited, which on the average should add from six to eight cents additional.

The six cents for hoisting and transferring may be divided as follows:

Labor	15 per cent.
Interest and amortization	30 per cent.
Electricity	20 per cent.
Maintenance	20 per cent.
Incidentals	15 per cent.

It must be emphasized that all such figures must vary under different conditions or locations.

It is often desired to generalize upon the cost of machinery

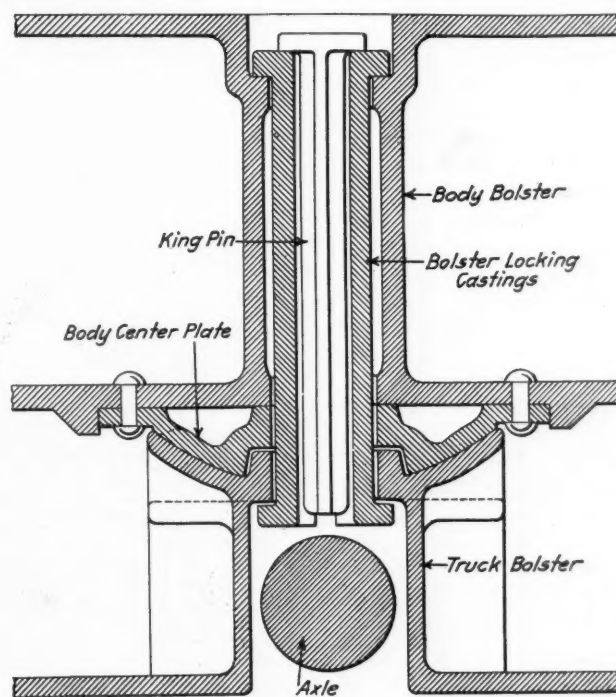
and its installation. To transfer a given tonnage of miscellaneous or package freight, say 1,000 tons per day, with a possible excess, at an outbound freight station of which two-thirds of this tonnage might be received within two or three hours in the afternoon, a capacity of 250 tons per hour should be provided. To be sure that there is ample capacity for contingencies and reserve, 30 carriers should be provided. This would mean that 10 tractors and 30 trailers or carrier-hoists, or 10 trains in all, corresponding to 30 motor-trucks would be required.

An investment of from \$40,000 upwards would be required for these 30 carriers, and two-thirds of a mile of track, or about \$1,300 per carrier, which includes the overhead trackage and the lifting as well as the transporting machinery. These figures are given as a close estimate for general guidance and may vary more or less, depending upon the specifications.

CAR AND TRUCK LOCKING DEVICE.

It is believed that if the weight of the heavy trucks used on modern passenger cars is added to the weight of the car body, it will greatly assist in preventing the raising of one underframe over the other in case of a heavy buffing shock or collision. In this way the damaging result, known as telescoping, can probably be greatly decreased.

With this idea in mind, the car department of the Grand Trunk



Device for Locking Car Body and Truck Together.

has devised a simple form of lock which will hold the truck to the car body at all times, but will not in any way interfere with its normal movements or action. This device has been made standard on that road and the Grand Trunk Pacific, and is being applied to a large order of new passenger cars now being built.

Reference to the illustration will show the form and application of the lock. It consists of two steel keys, with flanges at the top and bottom, of such a shape that they can be inserted in the somewhat enlarged center pin hole in the body and truck bolsters. Between them is inserted a center pin with ribs on each side that engage with the two keys and hold them in their proper position. When the center pin is inserted the flanges of the keys lap over the edges of the bolsters sufficient to prevent them from separating, while at the same time enough clearance is provided to allow the normal amount of free relative movement required in service. We are indebted to J. Coleman, superintendent car department, for this information.

ROSWELL MILLER.

Roswell Miller, who died at his home in New York on January 3, belonged to the older generation of railroad executives to whom so much of the credit for American railroad pioneer work is due and who are out of sympathy with public interference with the right of a railroad manager to direct the affairs of his own company. Mr. Miller was president of the Chicago, Milwaukee & St. Paul from 1888 to 1899, and since 1899 has been chairman of the board of directors. He retired from the presidency because of ill health; but before this illness, his life had been a particularly active one and his work for the St. Paul of permanent importance. He was a naturally conservative man, reticent and self-reliant. Under his management as president little or no new territory was developed by the St. Paul, but the property was improved, intensively developed and raised to the first rank among the best managed railroads in the West. Despite the fact that the management of the St. Paul was in accordance with the older ideals of American railroad management, and Mr. Miller was a president who was not only able and willing to assume the entire responsibilities of the management of his property, but personally was wholly out of sympathy and resented public interference and advice, the St. Paul became, under Mr. Miller's guidance, a road that commanded to a rather unusual extent the loyalty of its shippers, and especially of the traveling public. In developing the physical property and in molding the organization of his officers and employees, Mr. Miller set his own ideals of service and discipline, and these ideals were high.

Roswell Miller was born in Hartford, Susquehanna county, Pa., on October 28, 1843. He was the son of the Presbyterian minister of Hartford, and was one of a large family. His early railroad experience was on the Cairo & Vincennes, of which he was at one time secretary and later general superintendent. In May, 1882, he was made vice-president and treasurer of the Chicago & Western Indiana. He had valuable early financial training, having worked in the office of J. P. Morgan & Co., in New York. In April, 1883, he was made assistant to the general manager of the Chicago, Milwaukee & St. Paul, and in the following year the general manager's health failed and Mr. Miller was made assistant general manager, with much of the duties and responsibilities of the general manager's office on his shoulders. In April, 1885, the general manager died and Mr. Miller succeeded him. Three years later Alexander Mitchell, president of the St. Paul, died, and Mr. Miller was elected president, retaining for two years the general managership. In 1890 a general manager was appointed who took over a part of Mr. Miller's duties; but the development of the St. Paul and the success of its management were due directly to Mr. Miller up to the time of his ill health in 1899.

The extension of the St. Paul to the Pacific coast was in con-

trast to Mr. Miller's consistent policy of development of the existing property without extension during the time he was president. This Pacific coast extension was financed through the issue of stock, and when it became evident in 1910 that the St. Paul was failing to earn the 7 per cent. dividend that was being paid on the increased capitalization, Mr. Miller was one of the directors who first recognized and acquiesced in the necessity for reducing the dividend rate. His attitude in this respect was typical of the man. He did not believe in beating about the bush; he did not believe that there was any way of educating the public to the needs of railroads; he had little faith and less sympathy with the public, of which the politician was the spokesman and representative; he could see no object in hesitating to face the facts.

REFRIGERATOR CARS IN EUROPE.—A short time ago we gave

some details regarding the actual extent to which refrigerator wagons are being used in France for the conveyance of foodstuffs and other perishable merchandise, from which it was apparent that as regards both the number of these wagons in service and the extent to which they are employed, cold storage transport on the railways was capable of great developments. In a recent issue the French newspaper *Le Journal des Transports* took the consignors to task for not making greater use of refrigerator cars. The French railway companies have done everything in their power to develop this form of traffic. All the lines have a special tariff, which gives the owner of a private refrigerator car a reduction of 10 per cent. on the ordinary rates for carloads of roughly five tons. In view of the fact that such perishable merchandise as fruit and flowers is likely to fetch a higher market price when transported in this way, it is a little difficult to see why the benefits of this tariff are not being made use of to a much greater extent than is actually the case, especially as a very large proportion of the traffic in this form of merchandise is of the



Roswell Miller.

long-haul order. For instance, there is a very important and steadily increasing fruit and flower traffic between the Riviera and Paris, while the English, German and Swiss demands also increase year by year. Conservatism is probably at the root of the matter, since by far the greatest use of refrigerator cars is made by consignors of meat, fish and dairy products, while the consignors of fruits and early vegetables disdain their use, according to the report submitted by M. E. Bougault at the recent International Cold Storage Congress at Toulouse, France.

RAILWAY EXTENSION IN RUSSIA.—The committee for new railways in Russia, after investigating plans, has decided to recommend the construction of a railway from Lodz to Lenchitz, passing by way of Alexandrov, Egerzh and Ozorkov. At the same time the committee examined plans for the construction of various electric tramways in the district of Lodz.

TWO CONFLICTING THEORIES OF VALUATION.

Valuation Must Be Based on Market Value or on the Amount of the Investment. It Is Not Based on a Combination of the Two.

By HALBERT P. GILLETTE,

Appraisal Engineer, Formerly Chief Engineer of the Washington Railroad Commission.

No one who has given much thought to appraisals can fail to have reached the conclusion that the *object* of the appraisal must be known before the problems can be correctly solved. If the object is rate regulation, we have still to consider the fundamental theories of rate regulation before we can safely attack all the appraisal problems. There can be only three theories of rate regulation, which the writer prefers to designate by the following terms:

1. Competitive theory.
2. The agency theory.
3. The combined agency and competitive theory.

Under the competitive theory the rates of a public service company are assumed to be regulated by the law of supply and demand acting under competitive conditions. This does not imply that there shall be actual competition. The competition may simply be potential, as when a shipper of freight by rail may be free to ship by water, or as when a user of electricity for light may be free to use gas or kerosene. Competition is still potential, and often of enormous force, even where there is no substitute for a given service in a given locality, for the user may move to another locality where lower rates prevail. There is also the potential competition of other companies who may come into an existing field where rates are high. Finally there is often severe competition for the markets of the country, as when the lumber of Oregon and Washington competes with the pine of the South, thus affecting freight rates of railways serving those districts.

In the competition of different things and of different markets—potential as well as actual—we have had a powerful and automatic regulator of rates. The potency of such competition has been far greater than is commonly believed. But this is not a subject pertinent to the present discussion. It suffices to call attention to the fact that the competitive theory of rate regulation has been until very recent years the predominating theory in America. And its past influence upon our minds has been so great that only by an effort can we free ourselves from its coerciveness when we approach problems of rate making based upon a theory that is wholly different. According to the agency theory of rate regulation, every public service company is an agent of the public, delegated to perform certain services and to collect payment therefor. Webster defines an agent thus:

"One who acts for, or in the place of, another by authority from him; one entrusted with the business of another."

Because a public service company is regarded as an agent, it may exercise the power of eminent domain, it may be required to make a periodic accounting of its stewardship, it may be required to limit its rates of charge for service, it may be protected against competition, it may be required to act in harmony with other public agents. It is always subject to control and to protection. According to the combined agency and competitive theory, an attempt is made to regulate rates in part by competition and in part by direct control. This is the present theory—a mongrel growth that marks the evolution from the competitive theory to the agency theory.

Every appraiser must adopt one of the three theories of rate regulation, whether he does so consciously or unconsciously. If he adopts the competitive theory of rate regulation, then a public service property is worth only what it will earn. In brief, its total value is its capitalized present net earnings plus or minus the present worth of any increment or loss in future annual net earnings. This is commonly called the "commercial value" of a property; and there are those who

stoutly contend there is no other value. If we grant their tacit premise that competition is the only rate regulation, we must grant their conclusion that a property is worth what it will earn. But the moment we deny their premise, their conclusion is destroyed.

If the appraiser adopts the agency theory, the value that he seeks is the *investment value*, or more briefly, the investment or actual cost. An agent is certainly entitled to be recouped for all investments made in behalf of his principal. And it is equally certain that he is not entitled to receive payment for "values" not represented by actual outlay of capital on his part. Thus, if an agent buys copper at 15 cents per pound, and if it subsequently rises to 20 cents, the principal and not the agent should be the gainer by the increment in value.

In brief, then, the agency theory commits an appraiser to the policy of ascertaining the actual investment made by the agent, which investment is the "value" for rate making purposes. In such cases an appraiser follows what may be called the historical method of estimating the cost of reproduction of the property. He seeks to ascertain exactly what the public service company did to construct the given plant, and he estimates what it would reasonably have expended to create the plant and to develop its existing business. He checks his estimate against the available accounting records, or vice versa.

The appraiser who follows the agency theory is concerned with the past. His criteria are weighted average prices of preceding years and the accumulated deficits in fair return.

On the other hand, the appraiser who follows the competitive theory is concerned only with the *present* and the *future*. His criteria of value are present prices and present net earnings modified by the prospects of future change.

Having briefly stated the radical difference in these two theories, let us tabulate some of the more important appraisal corollaries that flow from each theory:

AGENCY THEORY.

1. Piecemeal prices allowed for piecemeal construction.
2. Weighted average prices of past years allowed.
3. All work actually done by the company is appraised; e. g.:
 - (a) Clearing rights of way as they existed at the time of construction.
 - (b) Taking up and relaying pavements in streets, where it was actually done.
 - (c) No allowance for increased value of a "seasoned road-bed" where nature has effected the solidification.
 - (d) Pioneer surveys and other expenses necessarily incurred in pioneer days allowed.
4. Development cost calculated by ascertaining the actual residual deficits in fair return.
5. No allowance for increment in values of land purchased for rights of way.
6. No allowance for investments in property not now in use, or for losses in economic value.

COMPETITIVE THEORY.

1. Only wholesale prices allowed for extensive work.
2. Present prices, or those that may be expected in the immediate future, are used.
3. Only that work that would need to be done today to produce an equivalent plant is appraised; e. g.:
 - (a) Clearing rights of way as they exist now.
 - (b) Taking up and relaying pavements necessary to duplicate the plant today.
 - (c) Allowance for "seasoning" regardless of its cause or actual cost.
 - (d) No allowance for pioneer costs now that pioneer conditions no longer exist.
4. Franchise value calculated by capitalizing the annual net profits that may reasonably be expected.
5. Allowance for all increments in land values.
6. No allowance for investments in property not now in use, nor for losses in economic value.

We might enumerate many other appraisal divergencies that occur in consequence of the two divergent theories of rate regulation, but the foregoing will suffice to make clear not only the fundamental difference of the two theories, but also the

rarity with which either theory is completely followed by appraisers, by commissions or by courts.

The writer maintains that, before we can ever emerge from the present jungle of contradictions in public utility appraisals, we must not only recognize the existence of these two theories, but we must decide exactly to what extent the one or the other theory shall be adopted. Possibly for the present we must continue to use a combination of the two theories, in order to tide over the present transitional period of rate regulation; but ultimately we must adopt the agency theory in its entirety, for we cannot continue to subject public service companies to strict control without giving them perfect protection from competition of all sorts. The rise or fall of prices paid for materials or labor is itself the effect of competition of one sort or another, and such a change in prices is beyond the control of the agents of the public, i. e., the public service companies. How preposterous, under the agency theory, it is to appraise a public utility during an era of low prices, such as we have just experienced, and to apply those low prices to materials that were actually purchased during normal years!

Yet this result is precisely what is prescribed by the public service laws of certain states and even by a decision of the Supreme Court. Equally preposterous, under the agency theory, is it to apply wholesale prices to a plant that was necessarily built piecemeal. Nor is it one whit less objectionable to go to the other extreme and pay a public service company for the taking up and laying of a pavement that did not exist when the company built its plant. All these are preposterous appraisal acts, if the agency theory is adopted as sound.

Subconsciously certain appraisers and certain important commissions have been working toward the agency theory of appraisals, for if we study their findings we see that the findings correspond with nearly all the conditions above tabulated under the agency theory. In fact, the Wisconsin Railroad Commission may be fairly said to have come to almost complete adoption of the agency theory of appraisal. It did not reach this position at one stroke, nor has it apparently realized fully whither its decisions were trending. In the early appraisals of the steam railways of Wisconsin we find, for example, no development costs or going value allowed. The agency theory had not carried the commission that far at that time. The writer mentions this fact, in no spirit of criticism, for in his appraisal of the railways of the state of Washington the writer was by no means consistent with the agency theory, although the writer was careful to secure and present to the railroad commission the actual costs of construction and equipment, so that, in this way, the commission really had before them an appraisal based on the agency theory, as well as the cost of reproduction.

It would seem that some appraisers have fancied that a value for rate making is a sort of composite picture of actual cost, cost of reproduction, present value and market value of stocks and bonds. The writer is at loss to find any logical relation between these four things. They certainly are not factors whose combination can be made to yield a correct answer to the appraisal problem. The actual cost is, in fact, an appraised value arrived at according to the agency theory; whereas the market value of stocks and bonds is an appraised value arrived at according to the competitive theory. Hence we have two distinctly antagonistic values.

There can be but one value for rate making purposes, and it must be based upon some well defined theory. This is the conclusion toward which the science of rate regulation has been slowly trending. It seems to the writer inevitable that the agency theory will eventually be adopted in its entirety for the appraisal of public service property created in the future. In other words, the actual cost of the property, including the accumulated deficits in fair return, will be the "rate making value." Even increments in land value will be regarded as profits, that is, as part of the fair return. This is for future expenditures when public service company expenditures will be carefully scru-

tinized; that is, when the principal (the public) will carefully watch its agent (the public service company).

But what of the past? Upon what theory shall we base our appraisals of public service company property that has been built during an era of competition? Shall we apply the newly adopted "agency theory" to property that was built and operated upon a "competitive theory" basis? These are difficult questions to answer, quite as difficult, in their way, as was the slavery question. When a newly evolved code of morals made it reprehensible to own slaves, there were many who advocated freeing the slaves without giving compensation to their owners. It would have been more just had the general public been taxed to purchase freedom for the slaves, and it would also have been more economic than the war that made them free. Similarly, if it now seems unfair to have permitted public service companies to have capitalized their profits, we should realize that this is a new point of view—so new that we still see no injustice in permitting private companies to do the very same thing *ad libitum*. May it not, therefore, be both just and, in the end, a matter of public economy to appraise the franchise values of existing public service companies by capitalizing their net profits? The early decisions of courts all leaned in that direction, and a very recent decision of an important public service commission is distinctly in favor of capitalizing net earnings to ascertain total values of public utilities.

Certain it is that the capitalized net earnings of one class of public service property have been almost universally recognized as being a "fair value," namely the capitalized earnings from land and land entities (like water) owned by public service companies. All land values are based on capitalized land rentals, and appraisers are a unit in conceding that public service companies are entitled to the "unearned increment" on their land. Why, then, should they deny the companies the right to possess the earned increment on their business? In other words, why should land rentals be capitalized (which is essentially what is done in appraising land at its present value) while other profits are excluded from capitalization? The only logical answer to this question is that the "competitive theory" still holds as to land, whereas the "agency theory" has partly displaced the "competitive theory" as to the other property of public service companies. This is tantamount to the adoption of a mongrel theory that is a mixture of the two theories and for which there is really no logical defense except that it is expedient to compromise.

In view of the relative novelty of the agency theory, in so far at least as its actual application to public service companies is concerned, is it not more logical and fairer to apply the competitive theory in its entirety to public service company property that has been created prior to the general adoption of the agency theory? In other words, should not the present "commercial value" of the property of public service companies, including all capitalized profits, be regarded as belonging rightfully to the owners of the companies? In brief, should not the competitive theory be applied in appraisals of existing public utility property?

On the other hand, should not the "agency theory" be applied in its entirety to all future relations between the public and the public service companies? An appraiser of public utility property hereafter created would then seek merely the actual investment in the plant plus deficits in fair return—the development cost.

Those who have written and talked on the subject of appraisals have often started their discourse with a definition of the term value. But they seem rarely to have perceived that the definition of "value" rests upon one of two theories, which theories should themselves be defined. Market value rests on one theory; investment value rests on another theory. The first is predicated upon competitive conditions, the second upon agency conditions. It has seemed to the writer that these two theories should be the very first things to consider before any definitions of value are adopted, and before an appraisal for rate making is even begun.

ERECTION OF KENTUCKY & INDIANA BRIDGE.

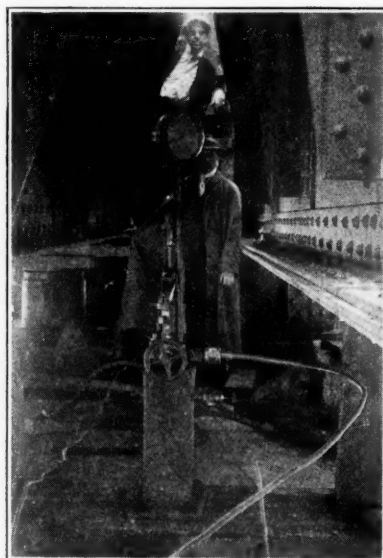
Details of Superstructure of Ohio River Crossing at Louisville, Including Two 620-ft. Simple Trusses Erected Cantilever.

The Kentucky & Indiana Terminal Railroad placed its new bridge over the Ohio river at Louisville, Ky., in service on Sunday, December 8, the formal opening being held November 27. This bridge is used by the Southern Railway; the Baltimore & Ohio Southwestern; the Chicago, Indianapolis & Louisville and an electric line connecting Louisville and New Albany, Ind. The old bridge was a single track structure built in 1886 and much too light for present day loading, handling from 175 to 180 movements a day over the gauntleted single track. The new bridge has been built at a cost of approximately \$2,000,000, the work covering a period of over two years.

A description of the substructure of the bridge was published

the entire distance, which reached a maximum of 115 ft., without enough separation of the constituent materials to injure the quality of the concrete. A photograph of this pipe in use is reproduced in one of the accompanying illustrations.

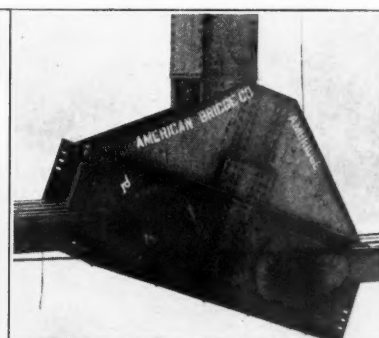
The superstructure of the bridge consists of five through trusses and a swing span carrying two steam and two electric tracks, gauntleted. The two long spans over the main channels are 620 ft. center to center of piers and the trusses used on these spans are the heaviest simple trusses ever built, the weight of each being 4,400 tons. A truss 373 ft. long spans a small island between the two main channels and an approach truss 275 ft. long is used at each end. The swing span is 400 ft. long, providing two clear



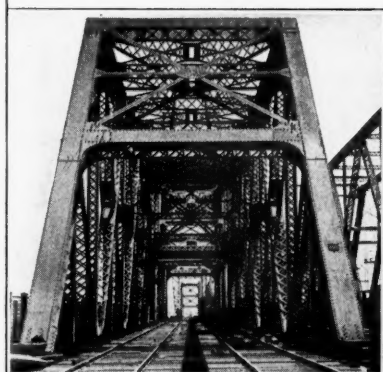
Jacking Up a Span.



Erecting Plate Girders in North Approach.



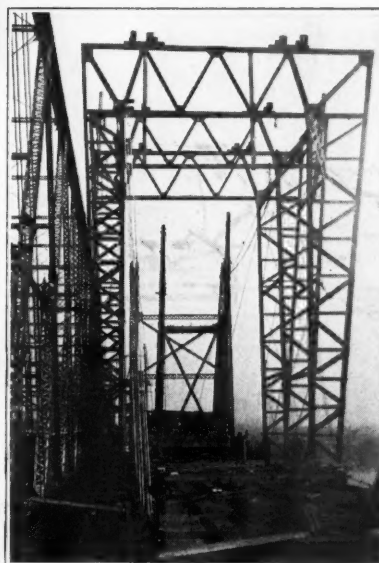
Special Section at L9 for Closing Lower Chord of Long Spans.



Portal View of Kentucky & Indiana Bridge Across the Ohio River at Louisville, Ky.



Is Seen at Left, Work on Long Span to the Right Is Just Beginning.

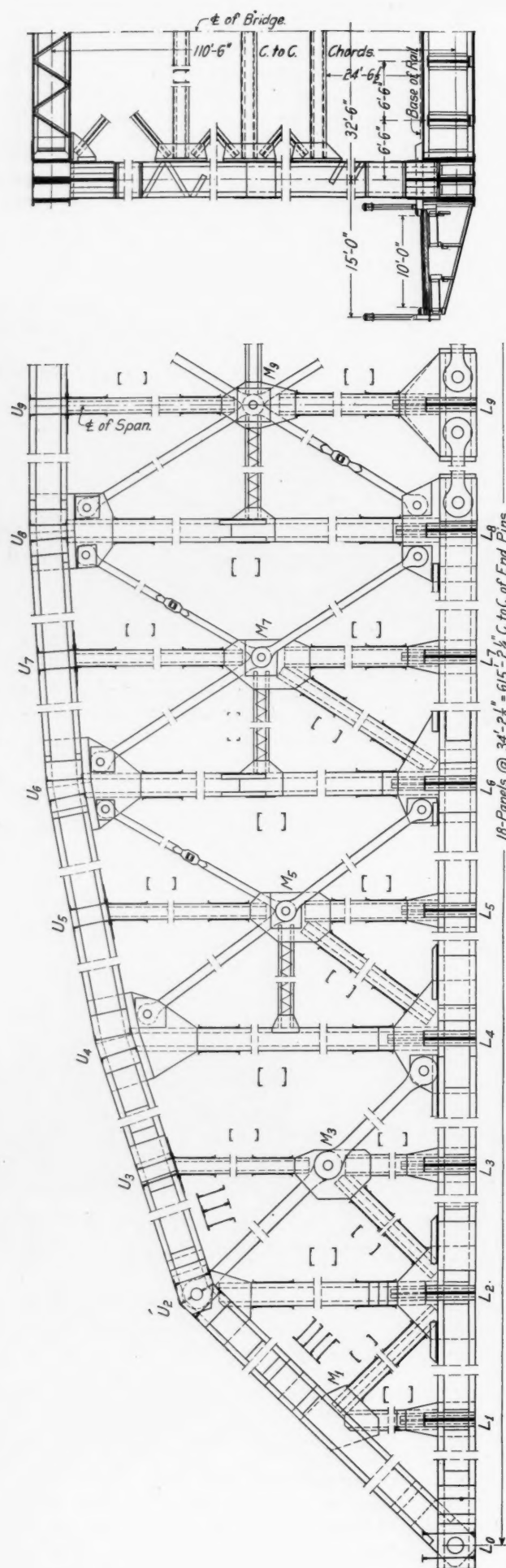


Setting up Traveler for Erecting Shore Span, Showing Relation of New Bridge to the Old.

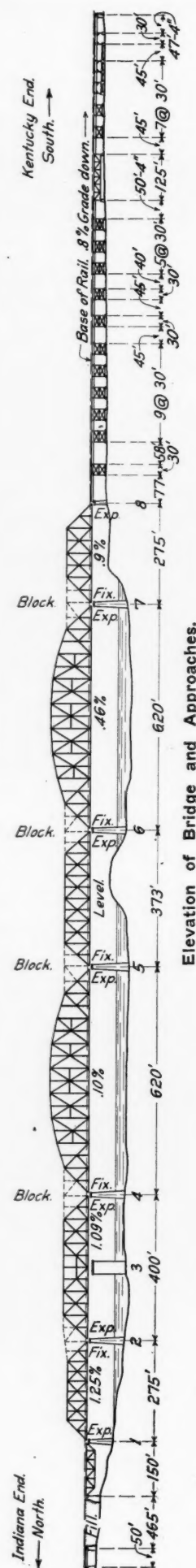
in the *Railway Age Gazette* of August 4, 1911, and a second article giving detailed information concerning the use of concrete piles in the foundations of two of the piers was published in the issue of September 8, 1911. This substructure work required the building of eight piers and two abutments, the maximum height of piers being about 122 ft. One of the typical piers contains 4,251 yds. of concrete and the north abutment contains 3,620 yds. The most interesting feature in the construction of these piers was the use of long steel spouts for dropping concrete to place from the deck of the old bridge. By the use of short tapered sections of pipe, which were described in detail in the first article mentioned above, the batches of concrete were made to drop for

channels each 172 ft. wide. The south approach consists of a steel viaduct 1,281.3 ft. long and the north approach consists of a fill 550 ft. long, a deck girder span over the tracks of the St. Louis division of the Southern and a 150 ft. deck truss. The trusses are 32 ft. center to center, and the maximum vertical distance between center of chords is 110 ft.

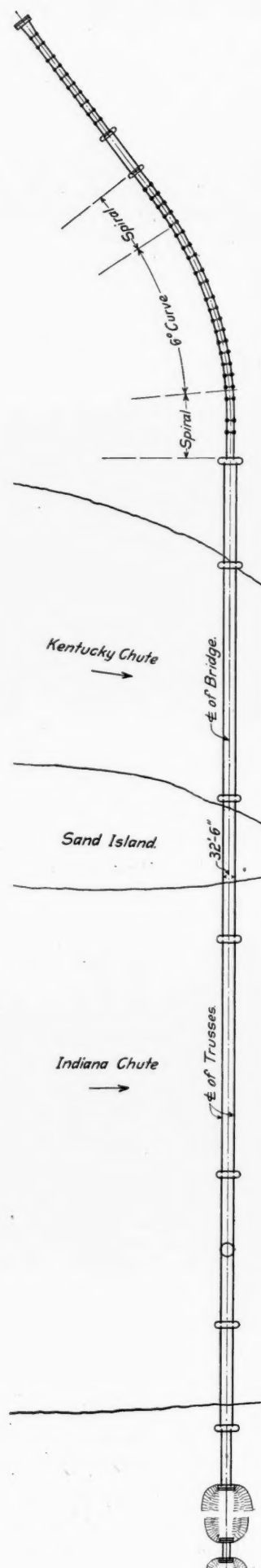
There is little unusual in the design of the superstructure, all compression members being latticed plate and angle sections and the diagonal tension members being I-bars pinned to the gusset plates. The heaviest section handled weighed 72 tons, being the lower half of the end post of one of the 620 ft. trusses. As an indication of the size of these trusses, the end pins are 21 in. in



General Elevation and Section of Channel Spans.

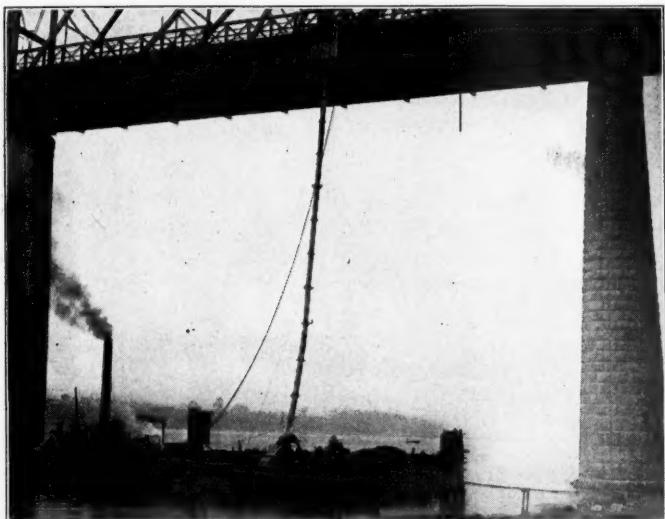


Elevation of Bridge and Approaches.



Plan of Kentucky & Indiana Bridge and Approaches.

diameter and 7.5 ft. long, weighing 5.2 tons. The bridge received three coats of paint, the first a shop coat of 20 lbs. of red lead per gallon of boiled linseed oil, the second a field coat of the same quantity of red lead and the third Atcheson graphite. In applying the field coats an ingenious method of stirring the paint was devised which proved simple and efficient. Three-quarter



Dropping Concrete 115-ft. Into Bridge Piers.

inch pipes tapped into the main air line on the bridge were carried down to paint barrels, the lower end of these pipes being held in the paint near the bottom of the barrel so that the escaping air bubbled up through the pipe and prevented the settling of the lead.

The bridge deck will be laid with ties treated 30 min. in open vats. A hot application of creosote oil was first made and this was followed by a cold treatment. The ties were dapped in a special plant shown in one of the illustrations. A 35 h. p. auto-



Erecting Deck Truss on False Work with Derrick Car.

mobile engine was installed to run the dapping saws and proved very economical for this purpose. It operated at 1,600 r. p. m. and by exercising a little care to keep the cylinders cool, all trouble with the engine was eliminated. It was possible to dap 60 ties per hour with the plant shown. It was also used for guard rails and proved as efficient with beveled ties as straight ones. The stops which automatically regulated the points for dapping, could be set at any desired point, thus eliminating all measuring and greatly increasing the speed of the work. In placing the guard rails on the deck three wood boring machines were used to drill the bolt holes.

For tightening the bolts a "Little David" bolt tightening machine manufactured by the Ingersoll-Rand Company was used, with which it was possible for one man to tighten 17 bolts per

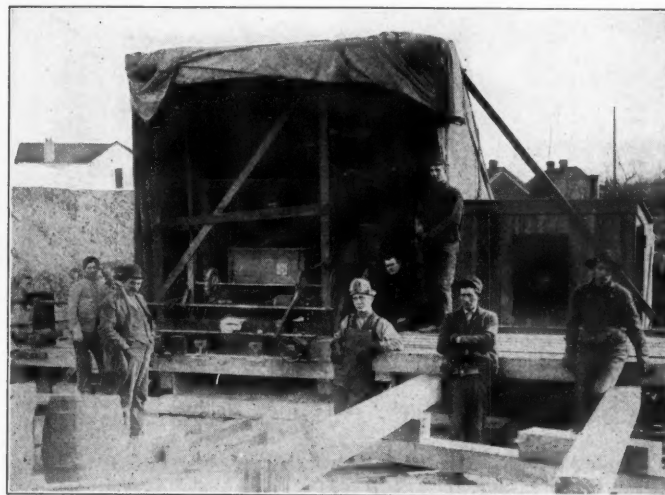
minute. The single bolt tightening machine was able to place the bolts as fast as the holes could be bored with three machines. The tracks for steam service are tie plated and laid with 85 lb. rail. The electric tracks are laid with 75 lb. rail. An overhead trolley is provided to supply the operating current to the electric cars. The highways, which are carried on brackets outside the trusses, are floored with creosoted timbers covered by the waterproofing course, on which is laid a layer of concrete, then a layer of sand and then the pavement of creosoted blocks.

The steel for the bridge was stored in yards on both sides of the river and was handled in the yards and on the bridge by two 30-ton, one 40-ton and one 50-ton locomotive cranes. The lighter members were carried out for erection on 10-ton trucks operating



New Approach Viaduct on the South End of the New Bridge; Old Approach Seen to the Left.

on a track laid on the highway of the old bridge, which is closely adjacent to the new structure. The members which were too heavy to be carried out in this way were towed out into the river on barges. Compressed air for the pneumatic tools was supplied by a four-inch air line carried the entire length of the old bridge on the abandoned highway. It was provided with "U" expansion joints at intervals of 500 ft. The compressor plant was located



Tie Dapping Machine Operated by Automobile Engine.

on the south shore and contained two Ingersoll-Rand compressors supplying 800 cu. ft. of free air per minute. To expedite the erection, a telephone line was carried across the old bridge with instruments located at convenient points about 600 to 700 ft. apart. Connection could be secured from any point on the bridge with any other point, or with the office of the erecting engineer, the

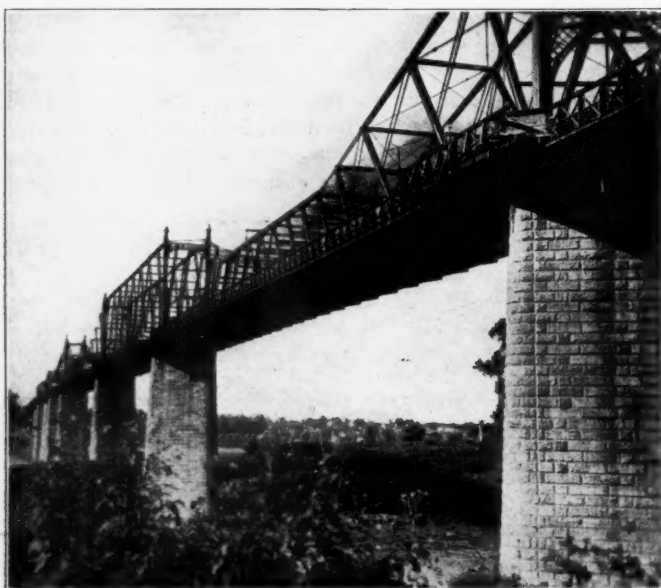
compressor plant or the storage yards. The smaller equipment used for the erection work was of the standard types used by the American Bridge Company on all of its large bridge erection, a noticeable feature being the attention paid to the elimination of accidents in this necessarily hazardous work. All needle beams are required to be made of four-inch I-beams, this being one of the orders of the company's safety committee, which is doing excellent work in safeguarding the lives of the men. In erecting the diagonal members in the large trusses the I-bars were packed



Operating House of One of the Big Travelers Used for the 620-ft. Spans.

on the center pin on shore and were erected by a toggle from the gusset plate.

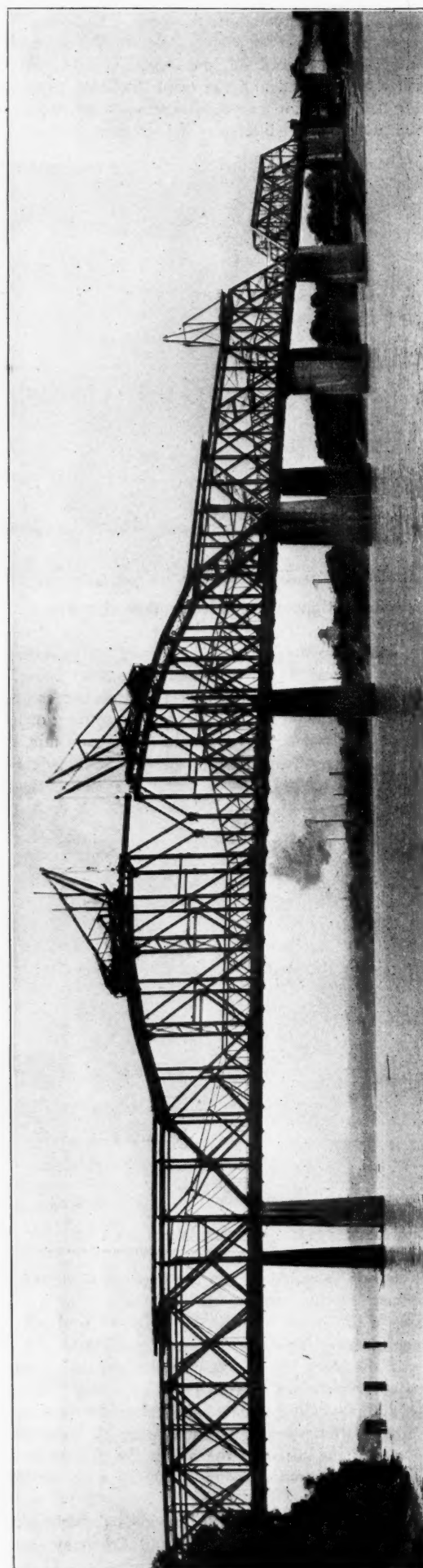
The plate girder span over the Southern tracks was erected by a 50-ton derrick car, shown in one of the illustrations. This car is provided with a 300-ton truck on the front end, having steel rimmed wheels and exceptionally heavy axles. All of the steel work in this span was covered with concrete for protection from locomotive gases. The only feature of interest is the use of three large holes in each panel of the girders to secure a firm bond between the concrete coatings on opposite sides of the girder.



Old Kentucky & Indiana Bridge.

The deck truss in the north approach was also erected with this derrick car, falsework being placed as shown in one of the illustrations. The shore spans on both sides of the river, and the short span over the island, were erected by travelers on falsework. On the north side the approach span was not over the river so that the falsework was supported on mud sills without the use of piling. The heaviest piece in these approach spans weighed 32 tons. The draw span was erected as a cantilever from the north end.

The two 620 ft. spans were erected as cantilevers from both



Making the Closure in the Top Chord of the 620-ft. Span over the North Branch of the River.

ends and it is thought that these trusses are as long as any ever erected in that manner. Two mule travelers, each with two booms, 120 h. p. motors, four spools and two drums on each boom, were used in the erection of these spans. Power was supplied to the motors at 500 volts from a power line carried along the old bridge, the cable having a cross section of 800,000 circular mills. In order to close the spans a special section at the middle of the bottom chord was designed which could be slewed to take up the difference in the length of the chord during erection and after the truss was closed. It was calculated in the design of this section that at the end of the erection the lower chord would be eight inches shorter than after the closure was made and the slewing of this short section was designed to bring the two pins in the section eight inches closer together in the slewed position than when it was horizontal. The details of this member are shown in one of the photographs and drawings. It weighed 19½ tons. In order to make the closure of the top chord of these long spans the outer ends of the adjacent spans were jacked up allowing the entire section of the span being erected to tilt until the closure could be made. To move the draw span in this manner for the erection of the 620 ft. span over the south channel, it was jacked up about six inches at both ends so as to make it act as a simple truss. The end next to the long span was then carried on rollers and the other end could be jacked up to effect the same result as in the case of the simple span between the long channel spans. Roller bearings were provided under both ends of this 373 ft. span over the island, as it was necessary to use it in the erection of both long spans. After the erection was completed one of these roller nests was locked by a special arrangement which was also used in certain stages of the erection.

For jacking up these spans two 400-ton and two 500-ton hydraulic jacks were used. A hydraulic pump operated by two men was used to secure the pressure and a manifold was inserted between the pump and the jacks to distribute it. The two men were able to raise a span about four inches in an hour which was sufficient for purposes of erection, although if greater speed was desired a gasoline engine with the same jack equipment could raise a span about nine inches an hour. In jacking up the spans a half inch plate was inserted every time the clearance was sufficient and when five and one-half inch clearance had been secured, a rail was used, thus eliminating the possibility of a drop in case of failure of a jack. Water gages were provided to indicate the amount that the long trusses were being moved and a bell system was installed for signaling between the gage and the jacks. A table was calculated for the use of the operators of the jack from which the effect on the long span of any given raise of the opposite end of the adjacent span could be determined.

The old bridge will be dismantled by cutting off the steel with acetylene torches. No attempt will be made to salvage the metal in the old structure. The shore span and island span will be dropped from the piers and dismantled on the ground.

This bridge, as well as all the other improvements made on the Kentucky & Indiana Terminal, has been handled under the direction of W. M. Mitchell, formerly manager and chief engineer. James B. Wilson is resident engineer on the bridge work and J. E. Greiner and J. M. Johnson are consulting engineers. The substructure was built by the Foster-Creighton-Gould Co. of Nashville and the superstructure was erected and the old bridge dismantled by the American Bridge Company. T. J. McCoy, assistant engineer in the erecting department of the American Bridge Company, was in charge of the erection.

LONDON ELECTRIC RAILWAY, ENGLAND.—This company's bill will provide for the construction of an end-on junction between the Hampstead Tube and the City & South London Railway at Euston, new connections between the Hampstead and Highgate branches of the Hampstead Tube, and certain deviations of that tube, and a junction between the Piccadilly and South Western Railways at Hammersmith. Power to raise additional capital and to issue stock certificates to bearer will be asked for.

EFFICIENT METHODS OF HANDLING CORRESPONDENCE.

By JOHN L. HANNA.

The question of efficient office methods in handling correspondence has, during the past few years, been actively taken up by several of the greater railroad systems. The writer was chairman of a committee which investigated the subject several years ago for the Pennsylvania Railroad, and this article is based on the report made by that committee and the results obtained from the application of the methods recommended.

Successful office operation, with prompt dispatch of the business, depends in a large measure upon the methods of conducting and filing correspondence, statistics and other records. It is only recently, however, that the importance of this has been recognized, as in the past office files and records have usually been placed in charge of young and inexperienced clerks with little education and no conception of railroad operation. Officials may come and go, but the clerk in charge of the office records, if he sticks to the job, becomes more useful and valuable year by year.

The volume of correspondence on the great railway systems has, in recent years, increased to overwhelming proportions, keeping pace with the growth of business and is largely augmented by the creation of additional offices. Some reduction in the number of letters written is imperative to afford a measure of relief to those officers who are now tied down to a desk, by reducing to a minimum the time which they are required to devote to reading and answering correspondence.

CONSOLIDATION OF FILES.

Probably the most effective means of reducing the number of letters written is the elimination of correspondence, as far as possible, between the head of a department and his subordinates, or staff officers. This is facilitated and made practicable by combining all of the files of the various staff officers with that of the department head. The principle of consolidating files to effect economies in time and the elimination of unnecessary letters, has been in use by many of our largest commercial enterprises, as well as on several railroad systems, for a number of years.

To secure the best results from this method the offices of the staff should be located as near to that of the department head as possible, to permit and encourage frequent consultation and conference. Careful consideration should be given to the re-arrangement of the offices, as in many cases they are situated without any thought of the relationship of the officers to each other. One consolidated file should be established to serve the chief and as many of the staff as the location of their offices will permit, and all files in the offices so served should be abolished. Care should be exercised in the selection of an efficient and competent file clerk.

All mail for the chief and his staff should be opened in this general file room, the previous files, if any, attached, charged and distributed to the respective officers. All incoming and outgoing correspondence, whether initialed or in letter form, should pass through the central file to permit proper record of its disposition being made and to clear the "suspense file," which will be described in detail later on. In cases where a large number of letters have accumulated on one subject, a brief summary of the contents should be prepared by some competent person and attached to the last communication prior to its being placed before the chief, thus making it unnecessary for him to read through the entire file.

To carry the principle of consolidation to its logical conclusion would mean also the consolidation of all the clerical forces as well. That is, one set of clerks and stenographers to serve, say, the superintendent of a division and all of his staff officers. This is standard practice on one well-known system and the experiment is being tried on several other railways.

ELIMINATION OF UNNECESSARY LETTERS.

The key to the reduction in number of letters written is the manner in which the correspondence is distributed to the person

who must take final action. All letters addressed to any officer included in the consolidation, requiring the attention of any other officer or subordinate, should be initialed to the proper party and sent at once to the file room. The central file takes a record of same on a simple form and sees that it is promptly dispatched. Your gain, under this arrangement, is in getting the correspondence into the hands of the party who takes action, at once, and the time formerly consumed in dictating and signing letters can be devoted to other purposes.

If this initialed letter requires no answer, it is simply noted and placed in the common file to which all have equal access. Should an answer be required it is prepared for the chief's signature, all letters between the staff officers being eliminated, so far as possible. The preparation of replies by the staff is not always satisfactory to the chief, but we find this condition can be overcome by having the staff officer first confer with the chief before writing a letter for his signature and in a very short time he should be able to prepare a letter from the chief's point of view, which will be signed by him when presented. This method is particularly effective with a division superintendent's organization.

In the consolidated file room all letters written on any particular subject, by the chief or any staff officer, will be filed together, so when papers are called for the file will produce everything written upon the subject. The possibility of two or more officers of the staff writing conflicting letters on the same subject is avoided.

Some officers take up with their subordinates, by correspondence, matters they should answer themselves. One prominent officer has stated that in his opinion too many unnecessary letters are written by the minor officers in order to place themselves on record, in the mistaken assumption they thereby relieve themselves of responsibility.

Through the medium of the central file it is possible for the several officers included in the consolidation to become more or less acquainted with the work of the other departments, and this enhances a spirit of co-operation, with a fuller realization that the primary object of the system is to expedite the handling of the business of the company.

In 1910 our committee had a count made of the number of letters written daily in all offices. On the twenty-one divisions, which have since adopted these methods, the number written by the superintendents and their staff officers was 2,700,000 per year, and what is known as "inter-staff" correspondence was a large proportion of this total. In response to a recent inquiry to ascertain the reduction that had been made, the estimates varied all the way from 10 to 60 per cent., but the average of all was 20 per cent. Using this as a basis these twenty-one divisions are writing approximately 540,000 fewer unnecessary letters per year than in 1910.

PROMPTNESS IN ANSWERING LETTERS.

The machinery of each office should be so adjusted that the cogs in every wheel fit into the cogs of the wheel in the next office lower down, that the whole may work in perfect unison. As far as the handling of correspondence is concerned the central file automatically does this for the offices included in the consolidation. One of the most important cogs in this machine is the method of keeping track of unanswered letters. Each office from the highest to the lowest should be compelled to maintain a so-called "suspense file."

The method which we have found most effective is to make an extra carbon copy on paper of some distinctive color (we use pink) of all letters written which require an answer. These are filed behind guide cards marked with the title of the officer to whom the letter is addressed. Immediately upon receipt of reply the "pink" copy is removed from this file. Opportunity must be given to clear the suspense file before the mail is distributed, or duplication of work results. Correspondence unanswered should be systematically hurried by the file clerk going over the "pink" copies daily. He should prepare, at least weekly, for forwarding

to each of the subordinate addressees of the office, a statement showing date and subject of each unanswered letter. Statements exhibiting unusual delays should be signed personally by the head of the office, with request that these delays be explained. This method shows up who the delinquents are and if improvement does not ensue, persistently bad cases should be made the subject of discussion at staff meetings.

COURTESY TO THE OUTSIDE CORRESPONDENT.

Criticisms or suggestions from the public often result in improvement to the service, as there are many details of operation that do not come under the direct observation of the officials. Any communications, therefore, from the outside correspondent should receive prompt acknowledgment and courteous attention by the officer to whom they are originally addressed. If information is requested that, for any reason, cannot be furnished at once, the correspondent should be so advised, or if in the nature of a complaint it should be promptly investigated and the conditions corrected if possible, always advising correspondent of action taken.

PRESS COPYING OF LETTERS.

With a good filing system press copying of letters is unnecessary. Under modern methods the carbon copy of a letter written is filed with the other papers on the same subject and the press copy book should therefore be abolished. In those offices where the responsible officer wishes to read the letters that have been written and sent out over his signature, during his absence from the office, an extra carbon copy may be made of all letters and placed chronologically in binders.

While some economy is effected by discontinuing press copying its principal advantage is that it facilitates the despatch of the mail, as a letter can be sent out the minute it is signed. No need to hold over until the following morning, for copying letters signed late in the evening as is often the case, for many busy officers sign their mail the very last thing.

There has been a general hesitancy about abolishing the press copy book, due to a prevailing opinion that a carbon copy will not be accepted in court as secondary evidence, where the original letter cannot be produced. This has been investigated by President Taft's "Commission on Economy and Efficiency," and in a brief which they had prepared the conclusion is reached that "By the overwhelming weight of judicial authority the carbon is held to be primary evidence, and is thus placed upon a much higher evidential plane than the press copy, and its introduction as evidence is not dependent upon notice to the opposite party to produce the original or submit explanation as to its non-accessibility." This conclusion would seem to knock out the last prop in favor of continuing the press copying of letters.

UNIFORM SYSTEM OF FILING.

During the past three years the Pennsylvania Railroad has inaugurated a uniform method of filing in more than two hundred of its offices. The advantages of such a system is well expressed in the following extracts from the report of the President's "Commission on Economy and Efficiency," who investigated these methods, viz.: "The commission made a study of methods pursued in handling correspondence by railroads and industrial concerns. The results of this study show the subject is receiving careful attention from managers of large corporations, and its importance is coming to be fully recognized. The trend is away from the elaborate and in the direction of the simple system. * * * It is important, in the opinion of the commission * * * that the whole system of handling and filing correspondence should be uniform. Under such an arrangement the correspondence files throughout the branches of the service would become one comprehensive system, with each letter bearing the same file reference regardless of point of origin. Uniform classification would also permit file clerks experienced in one part of the service to be useful in another and result in their training along similar lines." Further the commission also recommends

"That all correspondence * * * be filed upon a subjective classification arranged as nearly as possible upon a self-indexing basis, and where numbers are regarded as essential that a logical arrangement of numbers under a decimal or analogous system should be employed."

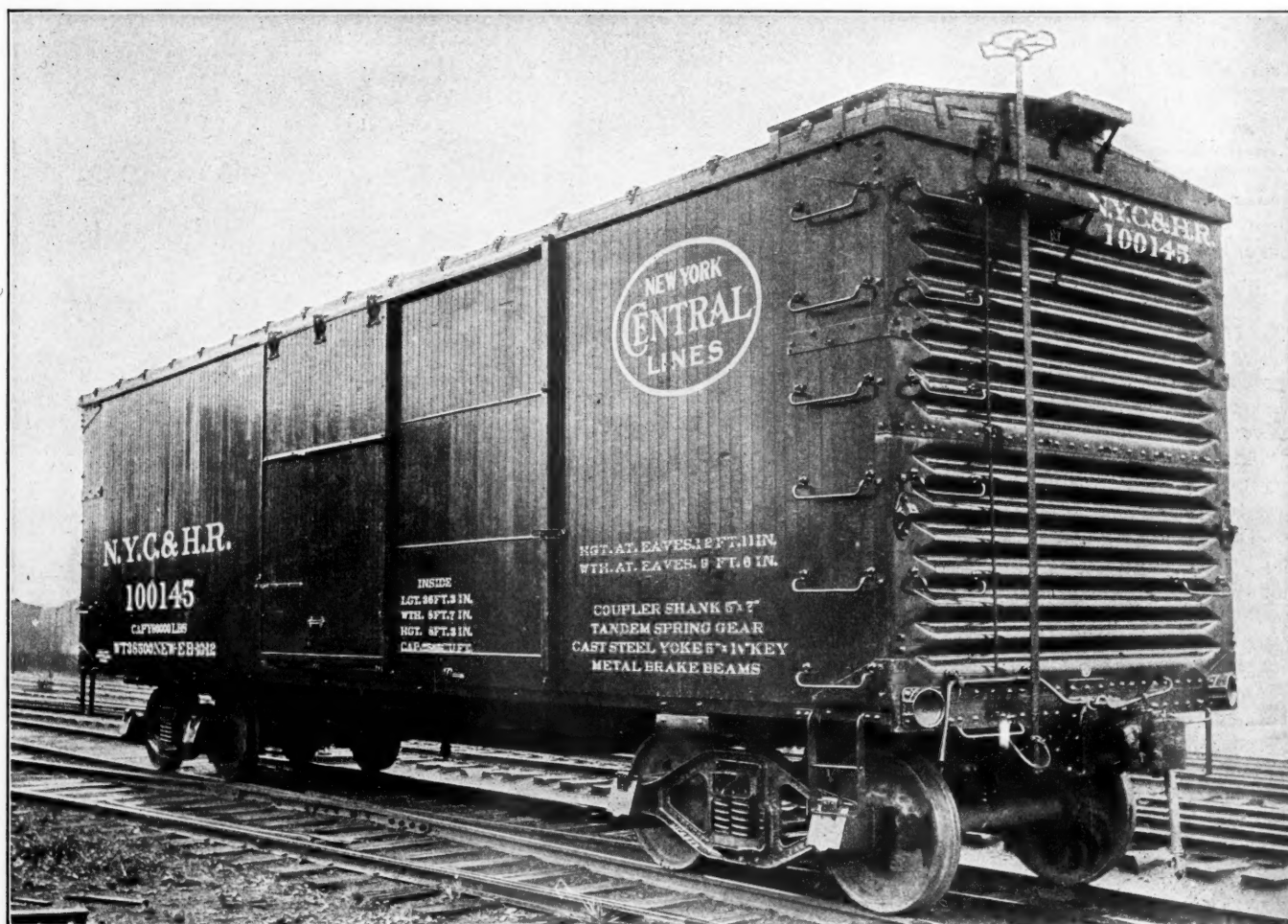
The system inaugurated in the two hundred offices referred to above is the "Railroad Correspondence File," better known as the "Decimal System," which was compiled by W. H. Williams, with revisions and supplements by the writer of this article. This self-indexing classification was reviewed at length in the *Railway Age Gazette* on September 15, 1911, so that it will be unnecessary to describe it further here.

SUPERVISION.

In conclusion attention is called to the importance of supervi-

STEEL END FOR BOX CARS.

In the series of articles on "Defective Box Cars and Damaged Freight," published in the *Railway Age Gazette* during the spring of 1912, special attention was given to the poorly designed ends, in the issue of April 26, 1912, page 954. Not only is there a considerable loss of grain and similar materials because of leakage, due to weak ends, but much damage is often caused by shifting loads which break through the ends of the cars. The New York Central reinforced the wooden ends with the heaviest wooden construction, but still found considerable difficulty because of damage caused by shifting loads. As a last resort the steel end shown in the accompanying illustration was experimented with and has proved so successful that it has been



Steel End Applied to a New York Central & Hudson River Wooden Box Car.

sion. Any system will not in itself improve present practices. The introduction of methods such as recommended in this article should be placed in the hands of some competent person, who should personally supervise the inauguration and interest the employees in charge. As he will meet with some opposition from those wedded to old practices, or who prefer to go along the lines of least resistance, his position should probably be strengthened with some minor title, carrying with it sufficient authority to obtain results.

Wm. C. Endicott, late Secretary of War, in "Business Methods of the War Department," very aptly says: "The difficulty of overcoming bias in favor of existing systems is great, as routine and custom run in grooves which deepen with age. Reports and rules may point the way to improvements, and orders enforce them for a time, but persistent effort and efficient supervision is the only hope of accomplishing enduring results."

placed on several hundred cars and will probably be used exclusively on new equipment and in rebuilding and strengthening old cars.

Its great strength, as compared to the wooden end, prevents damage to both the car and the lading because of shifting loads and thus reduces the time the car must be held out of service for repairs. The steel construction is lighter than that of wood; the old style wooden end on a certain class of New York Central cars weighed 1,863 lbs.; a better design of reinforced wooden end weighed 1,790 lbs.; and the steel end for the same class of car weighs 1,607 lbs. No end posts are used with the steel end and the inside length of the car is thus increased by about one foot, with a corresponding increase in the cubical contents of the car. There is no possibility of the ends becoming loose and thus allowing grain or similar lading to leak out, as is so often the case with the wooden construction. If the end is seriously

damaged it has a considerable value as scrap, while the wooden end is valueless.

The end is made in two parts to facilitate erection on the repair tracks or where an overhead crane is not available. If desirable the two parts may be riveted together in advance, if it is desired to apply them at shops where there is a good crane service. The two-part end has the additional advantage of reduced expense for replacement if one-half should be seriously damaged and need renewal. Since the lower half of the end is usually subjected to the greater punishment due to shifting loads, it is made slightly heavier than the upper half, being $\frac{1}{4}$ in. thick, as compared to $\frac{3}{16}$ in. for the upper half. The reduction in thickness of the upper half is estimated to save about 300 lbs. in the weight of the car. The lower half of the end is said to be equivalent in strength to a flat steel plate $\frac{7}{8}$ in. in thickness.

ACCIDENT BULLETIN NO. 44.

The Interstate Commerce Commission has issued Accident Bulletin No. 44, containing the record of railroad accidents in the United States during the three months ended June 30, 1912. The number of persons killed in train accidents was 148, and of injured 3,294. Accidents of other kinds bring up the total number of casualties, excluding "industrial" accidents, to 19,486 (2,302 killed and 17,544 injured). The total number of industrial accidents to employees was 24,177; 93 killed and 24,084 injured.

Adding the casualties to employees in industrial accidents to the figures given in the larger table, the total number of employees killed, including those not on duty, is 736, and injured 35,263; and this makes the total number of persons killed, all classes, 2,395, and injured 41,628.



Experimental Steel Box Car on New York Central & Hudson River with Special End.

The illustrations show the door as applied to a wooden car and to a steel box car that is now being tested out on the New York Central. When applied to a wooden car, the lower edge of the end is flanged and fits under the floor plank of the car, effectually preventing any possibility of leakage of grain at the end. The door is manufactured by the Imperial Appliance Company, Chicago.

FLOWERS IN RAILWAY WORKSHOPS.—Mrs. Bowen-Cooke, wife of the chief mechanical engineer of the London & North-Western, of England, opened the yearly chrysanthemum show in the town hall, at Crewe, England, a short time ago. Many of the exhibitors were employees of the London & North-Western. C. J. Bowen-Cooke, commenting on the fine exhibits, said nothing gave him greater pleasure, when passing through the various shops of Crewe railway works, than to see beautiful little bunches of flowers arranged on the men's benches. On one occasion one of the foremen asked him if he objected to this, and he replied that, on the contrary, it pleased him immensely. No one could put their heart and soul into their work better than those on whose benches those flowers were so artistically displayed.

TABLE NO. 1A.—Comparison of principal items with last quarterly bulletin and with one year back.

	Bulletin 44.	Bulletin 43.	Bulletin 40.
1. Passengers killed in train accidents.....	14	33	21
2. Passengers killed, all causes.....	52	71	58
3. Employees (on duty) killed in train accidents.....	99	209	107
4. Employees (on duty) killed in coupling.....	46	49	37
5. Employees (on duty) killed, total (Table 1a).....	554	884	512
6. Total, passengers and employees (items 2 and 5, above).....	606	955	570
7. Other persons killed (including trespassers, nontrespassers, and employees not on duty), all causes.....	1,696	1,428	1,646
8. Employees killed in industrial accidents.....	93	98	87

As compared with the corresponding quarter of 1911, passengers killed in train accidents are decidedly fewer; but the number of employees killed in coupling increased from 37 to 46. Other items in Table 1A show no marked changes.

The total number of collisions and derailments in the quarter now under review was 3,398 (1,145 collisions and 2,253 derailments), of which 118 collisions and 257 derailments affected passenger trains. The damage to cars, engines, and roadway by these accidents amounted to \$2,700,911.

Electric railways reporting to the commission (not included in the foregoing statistics) had 71 persons killed during the quarter and 1,018 injured; and there were 28 collisions and 17 derail-

Accidents to trains—miscellaneous	Killed		Injured		Killed		Injured		Killed		Injured		Killed		Injured		Killed		Injured		Killed		Injured		Total persons.													
	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.	Total	Other persons not trespassing.	Trespassers.														
Collisions	49	4,184	65	3,906	74	2	114	8,166	5	288	20	937	139	9,391	407	4,367	34	911	70	921	1	11	27	309	57	579	596	7,098	20	156	13	277	91	151	859	17,073		
Derailments	2	95	15	437	66	4,716	186	1,740	26	526	37	463	1	3	10	93	16	234	247	244	2,380	13	60	3	57	62	109	394	7,147	11	22	999	65	978				
Accidents to trains—miscellaneous	3	172	4	463	72	4,541	191	1,610	7	134	21	222	1	4	13	164	11	247	275	244	2,380	13	60	3	57	62	109	394	7,147	11	22	999	65	978				
Bursting of boilers.	19	35	2	1	128	3	416	601	105	4	122	1	2	2	4	51	2	26	64	13	722	1	13	4	125	4	11	22	999	65	978	11	22	999	65	978		
Total train accidents.	114	8,166	5	288	20	937	139	9,391	407	4,367	34	911	70	921	1	11	27	309	57	579	596	7,098	20	156	13	277	91	151	859	17,073	11	22	999	65	978			
Accidents to roadway or bridges	14	2	13	7	27	45	635	7	297	17	540	...	3	19	...	...	...	...	3	34	1	1	4	1	...	...	...	...	...	...	...	...	...	...	...	...
Not causing derailment.	29	252	3	15	7	31	298	178	2,173	56	1,131	122	2,062	...	23	23	115	30	220	409	5,724	15	43	17	71	43	70	120	1,635	...	...	...	...	...	...	...	...
While doing other work about trains, etc.	81	2,415	3	64	3	51	87	2,530	55	3,162	21	1,480	33	2,841	4	66	24	202	27	399	164	8,150	38	269	16	121	574	1,811	879	12,881
Coming in contact with overhead bridges, etc.	2	2,589	...	276	4	402	6	3,267	...	14	...	14	...	14	...	33	357	44	898	58	1,327	2	142	16	623	27	273	109	5,632	...	...	...	...	...	...	...	...
Falling from cars or engines.	30	103	...	1	...	6	30	110	62	112	80	187	100	325	43	72	206	305	206	697	1,476	107	117	121	261	1,083	1,016	2,038	2,980	...	...	...	...	...	...	...	...
Getting on or off cars or engines.	29	252	3	15	7	31	298	178	2,173	56	1,131	122	2,062	...	23	23	115	30	220	409	5,724	15	43	17	71	43	70	120	1,635	...	...	...	...	...	...	...	...
Other accidents on or around trains.	81	2,415	3	64	3	51	87	2,530	55	3,162	21	1,480	33	2,841	4	66	24	202	27	399	164	8,150	38	269	16	121	574	1,811	879	12,881
Being struck or run over at stations or yards.	2	2,589	...	276	4	402	6	3,267	...	14	...	14	...	14	...	33	357	44	898	58	1,327	2	142	16	623	27	273	109	5,632	...	...	...	...	...	...	...	...
Being struck or run over at highway grade crossings.	30	103	...	1	...	6	30	110	62	112	80	187	100	325	43	72	206	305																				

YEARLY TABLES.

The summaries for the year ended June 30, 1912, show that the total number of casualties to persons for the year was 180,123; 10,585 killed and 169,538 injured. These figures include 400 employees killed and 92,363 employees injured, under the head of "Industrial accidents" (accidents to employees in and around shops, on boats and wharves, at stations, freight houses, etc., and all accidents not occurring in connection with the movement of locomotives or cars). The annual tables include statistics received after the quarterly bulletins were printed.

The principal table for the year, No. 1B, is reprinted herewith. The corresponding table for the preceding year was given in the *Railway Age Gazette* of November 10, 1911, page 959. The principal comparisons for the two years are shown in Table 1c, as follows:

	1912.		1911.	
	Killed.	Injured.	Killed.	Injured.
Passengers:				
In train accidents.....	139	9,391	142	6,722
Other causes	179	6,995	214	6,711
Total	318	16,386	356	13,433
Employees on duty:				
In train accidents.....	596	7,098	620	6,601
In coupling accidents.....	192	3,234	209	2,966
Overhead obstructions, etc.....	77	1,523	76	1,510
Falling from cars, etc.....	573	13,874	539	12,989
Other causes	1,482	23,391	1,427	21,782
Total	2,920	49,120	2,871	45,848
Total passengers and employees on duty	3,238	65,506	3,227	59,281
Employees not on duty:				
In train accidents.....	20	156	13	174
In coupling accidents.....	...	2	...	...
Overhead obstructions, etc.....	1	12	...	...
Falling from cars, etc.....	53	312	2	13
Other causes	241	477	49	357
Total	315	959	292	954
Other persons:				
Not trespassing—				
In train accidents.....	13	277	11	175
Other causes	1,185	4,746	1,143	4,898
Total	1,198	5,023	1,154	5,073
Trespassers:				
In train accidents.....	91	151	81	141
Other causes	5,343	5,536	5,203	5,473
Total	5,434	5,687	5,284	5,614
Total industrial accidents	10,185	77,175	9,957	70,922
Grand total	400	92,363	439	79,237
Annual total	10,585	169,538	10,396	150,159

Cause of accident.	1912				1911			
	Number.	Number of persons killed.	Number of persons injured.	Damage to road and equipment and cost of clearing wrecks.	Number.	Number of persons killed.	Number of persons injured.	Damage to road and equipment and cost of clearing wrecks.
Defective wheels:								
Broken or burst wheel.	387	3	27					
Broken flange.	627	8	64	\$371,938	235	6	34	\$281,965
Loose wheel.	124	2	64	605,582	581			582,300
Miscellaneous.	127	2	20	97,671	163	11	72	89,073
Broken or defective axle or journal.			169	109,413	78		28	55,047
Broken or defective brake rigging.	410	2	104	302,146	355	9	88	310,783
Broken or defective draft gear.	528	4	157	411,294	382			230,968
Broken or defective side bearings.	177	6	48	110,456	131	2	29	77,572
Broken arch bar.	177	1	94	125,785	79			66,595
Rigid trucks.	287	3	130	275,828	119	1	7	138,370
Failure of power-brake apparatus, hose, etc.	184	2	66	124,979	55	1	30	40,318
Failure of couplers.	216	5	29	107,203	168	1	26	78,078
Miscellaneous.	208	2	30	98,892	185			94,264
	455	23	259	423,546	353	10	27	276,685
Total.	3,847	68	1,197	3,165,033	2,824	64	689	2,379,074

Annual Table 2A.—Detail Causes of Derailments Due to Defects of Roadway.

Cause of accident.	1912				1911			
	Num-ber.	Num-ber of persons killed.	Num-ber of persons injured.	Damage to road and equipment and cost of clearing wrecks.	Num-ber.	Num-ber of persons killed.	Num-ber of persons injured.	Damage to road and equipment and cost of clearing wrecks.
Broken rail.....	363	52	1,065	\$511,778	249	12	463	\$392,749
Spread rail.....	251	6	256	154,235	183	4	192	102,483
Soft track.....	327	13	294	228,070	108	1	128	65,192
Bad ties.....	52	30	20,492	41	17	17	18,972	31,207
Run kink.....	22	2	61	11,214	30	3	62	51,207
Irregular track.....	531	15	743	389,561	179	5	190	122,536
Miscellaneous.....	351	14	317	226,071	465	33	568	353,381
Total.....	1,877	102	2,766	1,541,460	1,225	57	1,560	1,007,460

The reports from electric railways for the two years show:

	1912.		1911.	
	Killed.	Injured.	Killed.	Injured.
Passengers	35	2,862	105	2,283
Employees	46	439	51	363
Employees, not on duty.....	1	24	4	18
Other persons, not trespassing.....	118	659	133	481
Trespassers	100	128	117	119
Total	300	4,112	410	3,264
Industrial	24	550	10	399
Grand total	324	4,662	420	3,663

EMPLOYEES IN SERVICE.

The total number of railway employees in service June 30, 1912, was 1,729,144, or 81,111 greater than the number correspondingly reported for 1911.

Employees in service of steam railroads on June 30, 1912.

Class of employees.	Number of persons.	
	1912.	1911.
1. Trainmen (engineers, firemen, motormen, conductors, brakemen, rear flagmen, train baggagemen, train porters performing duties of trainmen).....	245,653	11,461
2. Other persons employed on trains (dining-car employees, train porters, when actually employed by the respondent carrier).....	104,125	32,876
3. Yardmen (all employees in yard train work and switching)....	479,221	328,345
4. Switch tenders, crossing tenders, and watchmen.....	1,201,681	527,463
5. Bridgemen and trackmen.....	1,729,144	
6. Other employees (station and miscellaneous employees, shopmen, etc.), excluding all officers, clerks, indoor employees, and others engaged in work in which they are not specially exposed to railway accidents.....		
7. Total		
8. Employees excluded from item No. 6 above.....		
9. Total persons employed by steam roads on June 30, 1912.		

Ratios of Casualties.

Class.	Number employed June 30, 1912.	Killed. 1912.	Injured. 1912.	Number employed for one killed.	Number employed for one injured.
Trainmen	245,653	1,182	30,592	208	8.0
Yardmen	104,125	481	13,383	216	7.8
Switch tenders, crossing tenders, and watchmen.....	32,876	125	439	263	74.9
Trackmen and bridgemen....	479,221	828	22,099	579	21.7
Total employees specially exposed to railroad accidents.	1,201,681	3,635	142,442	330	8.4
Total employees in service...	1,729,144	3,635	142,442	476	12.1

ANNUAL TABLE No. 2.—COLLISIONS AND DERAILMENTS, YEARS ENDING JUNE 30.

	1912			1911			1910		
	Num-ber.	Damage to road and equipment and cost of clearing wrecks.	Killed.	Num-ber.	Damage to road and equipment and cost of clearing wrecks.	Killed.	Num-ber.	Damage to road and equipment and cost of clearing wrecks.	Killed.
Collisions, rear.....	1,142	\$1,292,885	117	1,099	\$1,241,193	109	1,311	\$1,398,763	119
Collisions, butting.....	704	1,314,232	157	609	1,220,519	187	695	1,514,381	194
Collisions, trains separating.....	353	144,495	4	138	145,360	7	418	164,883	5
Collisions, miscellaneous.....	3,284	1,578,594	100	3,527	1,664,984	133	3,437	1,551,252	115
Total.....	5,483	4,330,206	378	5,605	4,302,056	436	5,861	4,629,279	433
Derailments due to defects in roadway, etc.....	1,877	1,541,460	102	1,225	1,007,460	57	1,115	914,642	42
Derailments due to defects of equipment.....	3,847	3,165,033	68	1,197	2,824,379,074	64	2,734	2,227,352	40
Derailments due to negligence of trainmen, signalmen, etc.....	423	238,389	18	397	319,351	36	377	238,843	23
Derailments due to unforeseen obstructions of track, etc.....	412	478,675	61	595	358,166	66	350	464,414	58
Derailments due to malicious obstruction of track, etc.....	75	109,614	16	84	102,161	16	66	165,185	18
Derailments due to miscellaneous causes.....	1,581	1,664,081	129	1,421	1,383,512	110	1,276	1,184,243	159
Total.....	8,215	7,197,252	394	6,260	5,549,724	349	5,915	5,194,679	340
Grand total.....	13,698	11,527,458	772	11,865	9,851,780	785	11,779	9,823,958	773

The bulletin contains accounts of investigations, by the commission's inspectors, of the following train accidents:

Collisions.

Detroit, Jackson & Chicago.....	Dexter, Mich.	April 15
Illinois Central	Iowa Falls, Ia.	April 21
Delaware, L. & W.....	Baldwins, N. Y.	May 21
New York, Susq. & W.....	Macopin Lake Junction.....	June 4
Chesapeake & Ohio.....	Silver Grove, Ky.	June 8
Chicago, Ind. & Louisville.....	Bedford, Ind.	June 8
New York, Chicago & St. Louis.....	Crayton, Pa.	June 22

Derailments.

Missouri Pacific	Lyndon, Kan.	Jan. 14
Wabash	West Lebanon, Ind.	Mar. 7
New York Central.....	Hyde Park, N. Y.	Mar. 31
Southern	Moorhead, Miss.	April 2
New Orleans & N. E.....	Estabuchie, Miss.	May 6
Kansas City Southern	Blanchard, La.	June 3
Chicago & Alton	Shirley, Ill.	June 8
Nashville, C. & St. L.....	Dalton, Ga.	June 12

PROSECUTIONS UNDER THE 28-HOUR LAW.

The law forbidding the confinement of animals in cars without feed or water for a longer period than 28 hours (36 hours under certain conditions) is the subject of a chapter in the annual report of the solicitor of the department of agriculture.

The Agricultural Department reported to the attorney-general during the last fiscal year 631 cases of apparent violation of the law, which is 33 more cases than in the preceding year. Nearly 1,000 cases were pending at the close of the fiscal year, some having been carried over from the preceding year. Penalties were recovered in 357 cases and 98 cases were dismissed. Penalties aggregating \$28,400 were recovered during the year. The inspectors of the department say that there is no determined effort on the part of the railways in general to obey the law.

The report gives a list of the cases which have been prosecuted, with names of roads and amounts of penalties. The solicitor says that to recover the minimum penalty of \$100 does not operate as an effective deterrent. He calls upon the court to fix penalties and in many cases insists on the maximum of \$500. The report gives also the substance of eight decisions of the courts affecting the administration of this law.

The law prohibiting interstate movement of diseased live stock and regulating the movement of interstate shipments from quarantined districts has also been the subject of much attention from the department during the past year. One hundred and thirty-five alleged violations of these laws have been dealt with. Seventy-one suits have been decided during the year in favor of the government, usually by pleas of guilty. The government has lost a considerable number of cases because the courts have decided that as the carriers who were prosecuted had received the animals outside of the quarantined district and had transported and delivered them wholly outside that district, penalties could not be enforced.

FREIGHT CAR TRUCK EXPERIMENTS.

Effect of Degree of Curvature, Condition of Rails, Wheels and Trucks and the Use of Summer and Winter Oils.

In 1910 Professor L. E. Endsley, of Purdue University, made an extensive series of experiments at the Granite City, Ill., plant of the American Steel Foundries on the frictional resistance of various types of freight car trucks. A full account of these experiments was published in the *Railway Age Gazette* of March 24, 1911, page 691. The results showed that a truck constructed in such a way that it would remain square and hold the axles radially with the curve would pass over the curve with considerably less resistance than a truck otherwise constructed. In order to obtain additional information another series of tests has been conducted by Prof. Endsley, the results of which are briefly summed up in the following article:

The tests were conducted on an arch bar truck and an An-

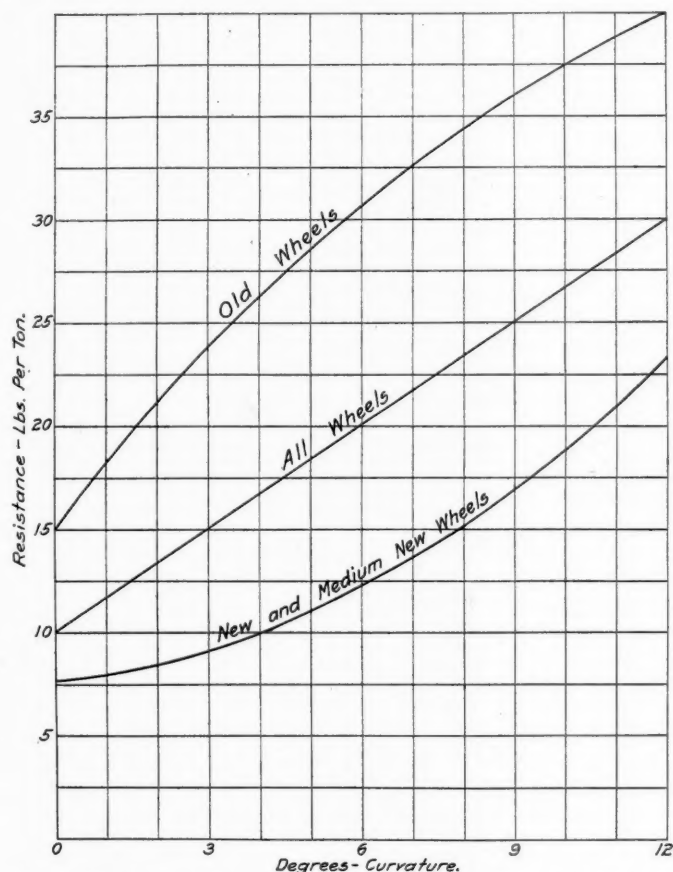


Fig. 1.—Resistance Curves with Different Conditions of Wheels and on Various Curves.

draws side frame truck. The arch bar truck conformed closely to standard practice in its design and details of construction, and was the same as truck B used in the previous tests, weighing 22,886 lbs. The Andrews side frame truck was of standard design with the exception of a heavier cast steel bolster, which brought the weight of the truck, with 650 lb. wheels, up to 12,034 lbs., which with the cast steel block, gave a total weight of 22,400 lbs. A 13-in. channel was used as a spring plank and was fastened to each side frame by eight tapered bolts instead of being riveted, as is customary. The truck was tested both with and without these bolts. When the bolts were removed, the side frames were spaced apart the proper transverse distance by a boss on each end of the spring plank, which fitted into recesses drilled in the center of the spring seat of each side frame. These two conditions are called the square and loose trucks. Thirty-two different wheels were used in such com-

binations, as to make ten sets. In seven sets cast iron wheels were used, while the Davis cast steel wheels were used in the other three. New, medium new and old wheels were used so as to obtain as wide a variation in wheel conditions as is met with in practice. The wheels were in some cases mated, and in other cases where non-mated, the difference in circumference in one case being as much as $\frac{3}{8}$ in.

Tests to the number of 184 were made with the Andrews side frame truck and 146 with the arch bar truck. One of the principal objects of the tests was to obtain sufficient data on which to establish a conclusion as to the effect of different degrees of curvature on frictional resistance. The curves in Fig. 1 were obtained by finding the average resistance in pounds per ton for all truck and wheel conditions for new, medium new and old wheels, as recorded on the Andrews side frame truck. The straight line for all wheels which was established from the results from ten different sets of wheels, conforms to the generally accepted theory that the frictional resistance, for average operating conditions, increases in direct proportion to the degree of curvature. Figs. 2, 3 and 4 show the difference in frictional resistance of different arrangements of wheels on new and old rails.

Wheel Conditions and Truck Resistance.—The condition of the flanges and the tread of a set of wheels has quite an influence on the frictional resistance of a truck regardless of its type. Table I shows to what extent the frictional resistance was affected by wheel contours. The sets of wheels are divided in five groups, as follows: Mated wheels (sets A, C and D); non-mated new and medium new (sets B and E); non-mated old (sets F and G); non-mated medium old (set H); and special, no coning (sets I and J).

TABLE I.—AVERAGE RESISTANCES FOR DIFFERENT GROUPS OF WHEELS.

Track.	Wheel Set.				
	A-C-D	B & E	F & G	H	I & J
Tangent	6.90	7.53	12.82	9.96	14.25
3 deg. curve.....	8.43	7.99	19.50	14.08	21.27
6 deg. curve.....	10.40	11.43	30.03	20.22	33.79
12 deg. curve.....	20.10	25.20	37.70	28.16	45.97

From these values it is obvious that the condition of the mating and of the contours of the wheels has a very important bearing on the friction resistance of a truck. The flanges and treads of the first two groups of wheels were in good condition. The three remaining groups produced considerably more friction, due to the high and sharp flanges and to the absences of coning.

Square and Loose Trucks.—The Andrews side frame truck was tested in both the loose and the square condition and all of the ten sets of wheels were used. Fig. 5 shows resistance for all wheels tested on the new rails. The resistance curves for new and medium new wheels are shown in Fig. 6. From Fig. 5 it will be seen that the saving in favor of the square truck varies from 3.54 per cent. on a straight track to 30.47 per cent. on a 12 deg. curve, and taking 4 deg. as the average main line curve, the saving is 20.72 per cent. in favor of the squared truck, which checks very closely with the 1911 report.

Use of Winter and Summer Oils.—Tests were also made to determine the frictional resistance due to the use of winter and summer oils. They were made in the first week in November. The Andrews side frame truck with mated Davis cast steel wheels was used; the truck was square and was run on a tangent track. The analysis of the oil was as follows:

	Summer Oil.	Winter Oil.
Flashing point (degs. F.).....	386	240
Burning point (degs. F.).....	420	317
Specific gravity (Baumé)	21.5	24.5
Loss at 100 deg. F. for 3 hours.....	0.001	0.017
Ash (per cent.).....	0.05	0.03
Cold test (degrees at which it flows).....	55	32
Viscosity at 350 deg. F. (time in seconds for 100 c. c. to flow from Dudley pipette).....	39	34

One hundred and forty-six tests were made and the average resistance for the summer oil was taken at 14.77 lbs. per ton and 8.41 lbs. per ton for the winter oil, the average temperature for the former being 41 deg. F., and for the latter 48 deg. F.

CONCLUSIONS.

From the experiments made the following conclusions seem to be justified:

First.—The curve friction of a freight car truck is almost directly proportional to the degree of curvature. If the wheels

Third.—A truck equipped with old wheels and high flanges gives a frictional resistance of approximately 100 per cent. higher than that given when the truck is equipped with new wheels. The wheels should be exactly mated in order to give least resistance. The coning on the wheels is of great value in reducing the flange friction on low degrees of curvature.

Fourth.—A truck constructed so that it will not get out of square will have less friction both on a tangent and on any degree of curvature than a truck that does not remain square.

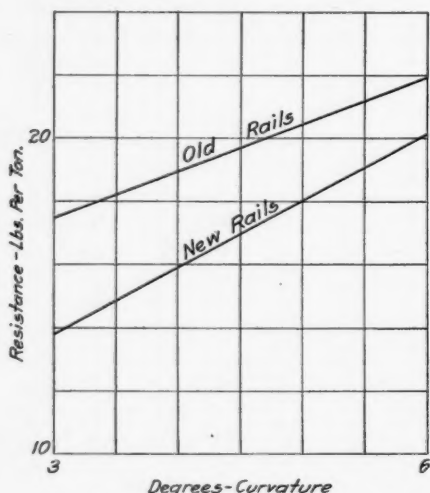


Fig. 2—Resistance Curves of All Wheels on Old and New Rails.

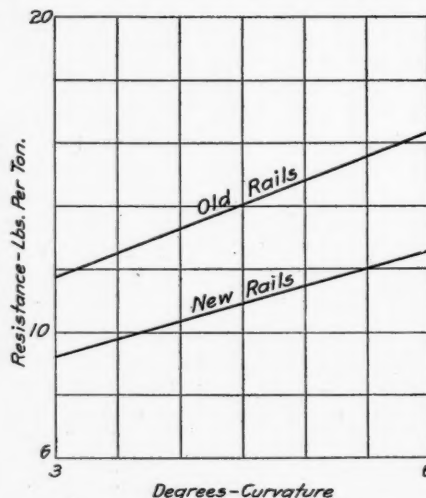


Fig. 3—Resistance Curves of New and Medium New Wheels on Old and New Rails.

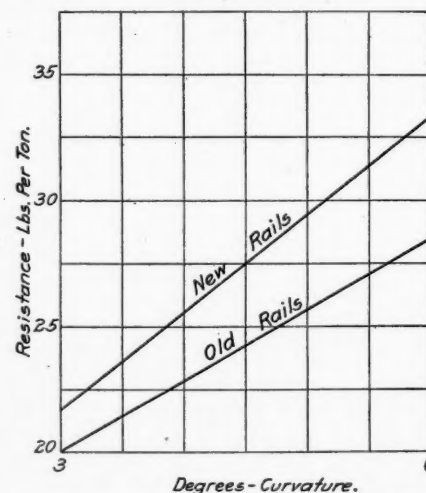


Fig. 4—Resistance Curves with Old Wheels on New and Old Rails.

under the truck are new and in good condition, the increase of frictional resistance due to curvature is not so great on the flat degrees of curvature as it is on the sharp degrees. If the wheels under the truck are old and have flange heights approaching

Fifth.—While the experiments with the winter and summer oils were not carried as far as they could have been, the results show that when the atmospheric temperature is from 40 to 50 deg. F. a truck lubricated with winter oil had about 43 per

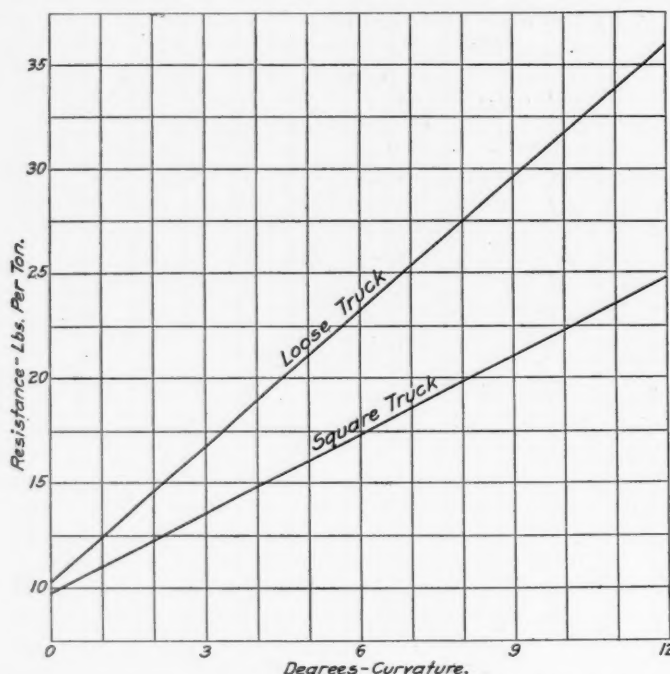


Fig. 5—Resistance Curves of Loose and Square Trucks for All Classes of Wheels.

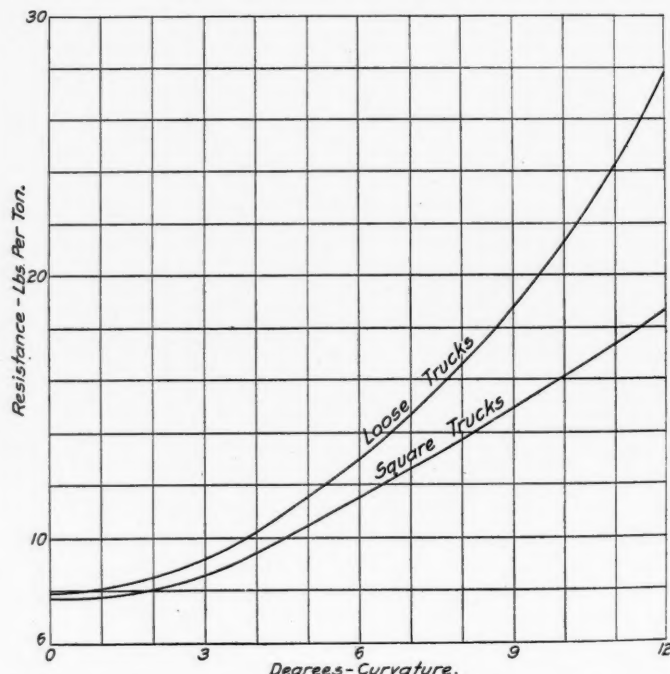


Fig. 6—Resistance Curves of Square and Loose Trucks with New and Medium New Wheels.

M. C. B. limits, just the reverse is true; that is, with old wheels the increase of frictional resistance due to curvature is greater for flat degrees than for sharp degrees of curvature.

Second.—The frictional resistance of a truck equipped with wheels of average contour on new rails is from 10 to 25 per cent. less than for the same wheels on old rails. In the case of high flanges, on old wheels, however, this statement does not hold true.

cent. less friction than one lubricated with summer oil, all other conditions being equal.

The Illinois Central furnished the wheels and axles, and the Missouri Pacific the old rails used on the 3 deg. and 6 deg. tracks. L. W. Wallace, assistant professor of car and locomotive design at Purdue University, and L. C. Farquhar assisted Professor Endsley.

FRANKLIN K. LANE.

Franklin K. Lane, of California, a member of the Interstate Commerce Commission since 1905, has been elected by the commission to serve as chairman, succeeding Charles A. Prouty. The chairman, it will be recalled, is elected for one year beginning January 13. In the rate advance cases Chairman Prouty wrote the opinion of the commission refusing the application of the eastern railroads to make increases in rates, and Commissioner Lane wrote the opinion in the western case. While Mr. Prouty's opinion in these cases was generally considered a rather closely reasoned expression of opinion, Commissioner Lane laid himself open to easy refutation in regard to a good part of what he had to say.

Mr. Lane's style is somewhat florid, and for this reason, probably, his critics have at times had a show of justice in accusing him of being more concerned with producing an effect than with dealing out strict justice. As contrasted with Mr. Prouty, Commissioner Lane has not hesitated to place himself on certain occasions in the position of a prosecutor or, as he would probably prefer to call it, a regulator of the railroads, rather than an impartial judge.

Mr. Lane was born in Prince Edward Island on July 15, 1864. He was the son of Dr. C. S. Lane, and moved to California when a small boy. He went to public school at Napa and to the high school at Oakland, Cal. After leaving high school he went into newspaper work and at the same studied law. He was graduated from the University of California with the class of 1886 and took a three-year course at Hastings Law College, doing the three years' work in a year and a half. After graduation he was engaged in the practice of law and was corporation counsel for the city of San Francisco from 1897 to 1902. He was a candidate for governor of his state in 1902. He received his party's vote in the legislature of California for United States senator in 1903, and was appointed a member of the Interstate Commerce Commission in December, 1905. At one time he ran for mayor of San Francisco, but was defeated by the labor union candidate.

Commissioner Lane, in his opinion in the rate advance cases and a number of times since in public utterances, has spoken strongly of the necessity for railroads to earn a sufficient return on the money at present invested in their property to make similar future investment attractive when compared with industrial enterprises and with railroad enterprises in other countries. Mr. Lane's early training was not of a kind calculated to make an unbiased and non-partisan administrator; but, on the other hand, since 1905 he has had an opportunity to deal with large questions—to inform himself very fully of the problems that are presented by the transportation question in this country—and it may well be that with the added responsibility of the chairmanship he will take a rather broader view of his responsibilities and of the responsibilities of the com-

mission to the country as a whole. The position is one of really great responsibility and possibly never more so than in this coming year. With a return of prosperity, another year of large crops and the natural development of the country, which has been retarded since 1908, the railroads of this country will need all of the co-operation that the Interstate Commerce Commission can give them to handle the business offered adequately and satisfactorily. They will need all of the moral support that the commission can give in raising capital for improvements, which have been awaiting the end of this industrial depression, and the commission will necessarily have to accept some responsibility, together with the managers of the railroads, for the provision of sufficient facilities to furnish satisfactory service.

While Mr. Lane's activities have been such as to cause him to be looked upon chiefly as a "friend of the people," he is to be credited with a signal service which will be remembered by railroad officers with very definite appreciation—his championship of the uniform demurrage rules for freight cars. This reform in the freight service was not popular with shippers, though it was really in their interest, and Commissioner Lane helped the railroads to win success in a hard campaign.



Franklin K. Lane.

PANAMA TOLLS.*

The sentiment in Congress and elsewhere in favor of relieving the coastwise shipping from the payment of Panama tolls seems to be due largely to the belief that if tolls are collected from the steamship lines the freight rates which they charge and the rates of the transcontinental railroads will be higher by the amount of the tolls, and the public will thus pay more in added freight rates than it will gain in tolls received. This argument, however, assumes an improbable adjustment of rail and water rates. The rates of the steamship lines and the railroads will not be higher if Panama tolls are collected from the coastwise line.

In order to bring about this adjustment of rail and water rates there must be, first, active, rate controlling competition among the water lines, and, second, it must be the policy of the railroads to fix rates so as to compete actively with the carriers by water for practically all traffic moving between the two seaboard. Will these conditions exist? Steamship lines, when operating between common termini, adjust services and rates by "conferences."

Whether there be canal tolls or not, rates by water carriers will be such as the traffic will bear; the upper limit of what traffic by water will bear will be the lower limit to which rates are brought by the railroads; and the tolls will be paid by the owners of the steamship line instead of by the shippers in additional rates.

*From an address by Emory R. Johnson, special commissioner on traffic and tolls, before the Western Society of Engineers, Chicago, January 8, 1913.

General News.

W. C. Brown, president of the New York Central lines, will be the principal speaker at a highway improvement convention to be held at Springfield, Ill., on January 31.

The "Banner Limited," of the Wabash, running between Chicago and St. Louis, is now made up wholly of steel cars. This is the first of ten new solid steel trains to be put in service by the Wabash.

The federal grand jury at New York City this week resumed its inquiry into the alleged illegal doings of the New York, New Haven & Hartford and the Grand Trunk. Two clerks of the New Haven road were examined at length concerning the steamer lines owned by the New Haven.

An aviator, Faller, at Berlin, Germany, on January 4, remained up in the air for more than an hour, with five passengers; and on January 5, he ascended with seven passengers and remained up seven minutes. The seven passengers, with the aviator, weighed 1,242 lbs.

Governor E. M. Ammon of Colorado, proposes to recommend the abolition of the state railroad commission and the establishment, in place of the commission, of a public utilities court. Mr. Ammon believes that the public body which regulates the railroads ought to have the powers of a court.

The railway commission of Canada has issued a general order, No. 96, prescribing specifications for automatic audible signals at highway grade crossings. Besides having a bell, to be rung on the approach of every train, such signals must bear the word "danger," in letters 6 in. high, and be illuminated so that this word will be visible in the night.

The Committee on Rules of the lower House of Congress has decided to lay on the table indefinitely the resolution, proposed by Congressman O'Shaunessy, of Rhode Island, calling for an investigation of the New York, New Haven & Hartford and the Grand Trunk. The majority of the committee believe that the Department of Justice, which is prosecuting these roads, should have a free hand, with no interference by Congress.

At hearings before the Senate Committee on appropriations at Washington this week, representatives of numerous mercantile bodies presented arguments in favor of the continuation of the Commerce Court. B. A. Dean, of Auburn, N. Y., appeared for the National Hay Association; Luther M. Walter, of Chicago, for the Railroad Commission of Louisiana, the Yellow Pine Manufacturers' Association and others; and E. E. Williamson, of Cincinnati, for interests in that city.

The fourth annual meeting of the American Society of Engineering Contractors will be held on Tuesday, January 14, in the United Engineering building, 29 West Thirty-ninth street, New York. In addition to the transaction of routine business, William L. Bowman, civil engineer and attorney-at-law of New York, will read a paper entitled "Legal Hints to Contractors" and Edward F. Croker, ex-chief of the New York Fire Department, will give a talk illustrated by lantern slides on "Fire, Its Effects and Its Prevention."

Senator Bristow, of Kansas, has introduced in Congress a bill to provide for a national commission with authority to regulate industrial concerns doing an interstate business, in the same way that the Interstate Commerce Commission regulates interstate carriers. In the legislature of the state of New York Senator Healy has introduced a bill to consolidate the two public service commissions of the state, which now have authority over the First district and the Second district respectively, into a single commission of seven members. There are now five men on each commission.

A strike of conductors and motormen at Yonkers, N. Y., last week has resulted in the complete suspension of street railway traffic in that city for more than seven days. It appears that some months ago the street railwaymen's union induced the city government of Yonkers to pass an ordinance forbidding the employment in that city of any motorman who has not had fifteen days' experience or instruction in that work, on lines within that city. The company, therefore, has made no effort to engage

men from other cities to take the place of the strikers. The street railway men are now trying to get similar ordinances adopted in Mount Vernon, N. Y., New Rochelle and in White Plains.

President Miller, of the Chicago, Burlington & Quincy, has announced that it is proposed within the next few months to transfer the auditing department, now in the general office in Omaha, to the new general office building in Chicago, a change which will affect about 200 employees. Mr. Miller gives as the reason for the change the very large increase in recent years in the volume of statistical information required both on account of the increase in business and the demands of public authorities, which require a concentration of the department where it can be most efficiently managed. Mr. Miller's announcement was given in confirmation of rumors which have caused vigorous protests for several days by the Omaha newspapers and by the Commercial Club, which seem to feel that "the great city of Omaha is being reduced to the condition of a way-station."

The Tennessee state legislative board of the Brotherhood of Firemen, which has outlined its wants for presentation to the new legislature, will include among other requests one that the pay of members of the legislature shall be \$8 a day; also one that railway crossing flagmen shall not be required to work over eight hours a day. These unselfish requests are accompanied by the usual demands for the repeal of laws which are thought to be unjust to labor unions and for an electric headlight bill and a bill forbidding railway black-lists. The president of the legislative board for the ensuing year is H. V. Reid, of Memphis, and the secretary is D. J. Bennett, of Jackson. Mr. Reid says that the brotherhood desires the repeal of the fellow servant law of Tennessee, which prevents employees from suing for damages for injuries in cases where a fellow servant is partly responsible for the injury.

A committee of officers of the Panama Railroad was appointed on December 18, 1912, by Col. George W. Goethals, to review plans for some proposed transmission line bridges, to consider the various features of proposed telephone and telegraph lines, to report on the adjustment of the proposed signals to the new conditions, to consider possible forms of intercommunicating systems from both the operating and military viewpoints, and to make a preliminary study of the proposed electrification of the Panama Railroad. This committee consists of Edward Schildauer (chairman), Lieut. Frederick Mears, Capt. W. H. Rose, C. L. Bleakley, W. R. McCann and W. H. Fenley, the last named the signal engineer of the road. A sub-committee consisting of Messrs. Fenley and McCann was also appointed to make a preliminary report on electrification, as all of the other propositions to be considered by the committee will be fundamentally affected by the kind of motive power that is employed.

St. Paul Electrification.

The Secretary of the Interior has this week granted the Great Falls Power Company, of Great Falls, Mont., authority to construct over government lands a transmission line for electric power which is intended to provide for the electrification of the road of the Chicago, Milwaukee & Puget Sound for a distance of 450 miles, from Harlowtown, Mont., to Avery, Idaho. The grant is for fifty years and is subject to readjustment every ten years; and the government retains rights in relation to the regulation of rates and service. The permit cannot be transferred without the approval of the Secretary of the Interior.

The officers of the Chicago, Milwaukee & St. Paul say that preliminary plans for this electrification are now being made. The line in question includes the sections over the Bitter Root, the Rocky and the Belt mountain ranges. The maximum grade on this part of the road is 1.7 per cent. eastbound, and 2 per cent. westbound. Included in this section are the St. Paul Pass tunnel, nine thousand feet long, the Donald tunnel and several smaller tunnels. From Lombard east to Summit, 44 miles, there is a continuous ascending grade averaging 1 per cent.

Power will be delivered to the railway line at five points, Bowen, Harlowtown, Deer Lodge, and at three points between Deer Lodge and Avery. It is expected that the overhead trolley will be used, with a working current of probably 2,400 volts;

and the alternating current on the transmission line will probably be 100,000 volts. It is expected that the work will be begun within two years.

A "Clear Failure."

It seems to us perfectly clear that the present controversy between the New England States and the New Haven railroad makes it manifest that State regulation of great industrial combinations is a failure. We think there must be and will be a steady trend towards federal regulation. Moreover, if it is wrong for the New Haven to control the water transportation of Long Island Sound and of the Maine coast or of the suburban electric lines, there ought to be some authority which can tell the railway so before it buys its steamships and trolley lines. That authority, it seems to us, can be exercised efficiently only by the federal government.—*The Outlook*: Lyman Abbott, Editor; T. Roosevelt, Contributing Editor.

The New York Barge Canal.

John A. Benschel, State Engineer of New York, in his annual report, says that the cost of the barge canal system will be more than \$101,000,000, which is the amount appropriated to build it. More funds must be appropriated within the next two years. The additional expense is due principally to the increase in the cost of lands and waters taken for canal purposes above the estimate of 1903 and the increased price of labor and materials. The new canal will be ready to open in 1915, and at the rapid rate at which work is going on, the Champlain canal will be completed next year. If progress on the Scotia dam is rapid the canal between the Hudson River and Oswego will be ready in 1915.

A large number of bridges must be built along the canal, and the demands of the highway traffic call for bridges of greater width and length than were provided for in 1903. In the 1903 estimate there was included an item of \$729,644 for machinery for locks, which were to be twenty-eight feet wide. The locks are being made 43 feet wide, which will increase their cost and the cost of the operating machinery. Poughkeepsie, Newburgh and other cities along the Hudson desire to have barge canal terminals.

"To the People of Texas."

The above is the headline of a half-page display advertisement, signed "General Managers Texas Railroads," which has lately appeared in the newspapers of that State. We quote a portion of this manifesto:

"If you owned several thousand acres of land covered with valuable timber remote from market and desired to have that timber cut and hauled to a city where you could sell it to the best advantage; and if you should make a contract with Bill Jones to get that timber to market; he to furnish the wagons and teams and hire all labor, and you to pay all his expenses incurred in carrying out the contract, such as wages, repairs, damages, etc., and in addition thereto, pay him a fair return on the value of his outfit, would you want his expenses to be reasonable or unreasonable? Would you force him to employ more men than he needed? Would you want to put him to any unnecessary expense? And if he could, by borrowing money and buying new wagons and better teams and improving the roads, reduce the expense of getting your timber to market, without additional cost to you, would you be willing for him to do so? And if any man, or set of men, should, for selfish and pecuniary gain, undertake to increase Mr. Jones' expense (which you must in the end pay), would you encourage and help them do that? Or would you assist Mr. Jones in holding down the expense to as low a sum as possible, consistent with justice and fair dealing?"

"What would be your answers to the foregoing questions? Why, of course, you would say, 'I have bound myself to pay all the expenses of every character incident to, or connected with, the business, and I want these expenses to be as small as possible. And if Mr. Jones can, by improving the roads over which the logs are hauled, and by getting better wagons and teams decrease the costs, I not only want him to do so, but I will help him. And I will certainly not do anything to increase the expense, but, so far as I can, will keep others from doing so.'"

"You act through agencies created by you, the Legislature, Courts and Commissions, and these agents should, and we believe will, look out for and protect you against unnecessary

and unjust expense. The Legislature can help the railroads decrease the expenses without additional cost to you. In spite of all we can do to prevent it, the expenses of operating the railroads are increasing more than the revenue, and unless these expenses are arrested an increase in freight rates will be the result. We sincerely regret this condition, and will do all we can to prevent it, but we need your aid and cannot succeed without it. . . ."

The Right to Run Past Signals.

The cable reports that Knox, an engine driver on the Northeastern Railway of England, has been suspended for running past signals. He had just been put back on his run after a strike in defense of the right to get drunk on his own time. It remains to be seen what position the union will take in support of the right to run past signals at discretion. In support of "personal liberty" to drink there was a strike which cost the Northeastern \$250,000, and the British journals estimated the aggregate loss of all trades which were embarrassed by the tying up of the Northeastern at \$5,000,000. The strikers won a nominal victory, for investigation showed that Knox had not been "drunk in law," and he was ordered reinstated. But the victory cost the strikers a week's wages for breach of their contract of employment, and it is now "up to them" to say what they are willing to pay to vindicate the right to run past signals. This is a more interesting question here than the "personal liberty" question which was the subject of many stump speeches by the British walking delegates and the politicians in sympathy with them and hungry for the labor vote.

The claim of locomotive engineers to indulge at discretion is preposterous, and yet the public opinion of railway riders and unionists in this country tolerates a more dangerous fault. Our railway administrators do not venture to enforce discipline about signals. It has been stated publicly that one of the roads now on trial before its passengers and the Interstate Commerce Commission for its accidents has a record of eighteen such drivers as Knox, and has not disciplined them for fear of the union.

Is not improvement in discipline quite as valuable as ordering the railways to carry full crews, to install safety appliances of uncertain value and in unlimited quantities, and to do many other things at an aggregate cost of hundreds of millions of dollars which the roads are not allowed to charge rates to cover? If the Interstate Commerce Commission is to press the railways on these points should it not also take charge of the unions?—*New York Times*.

Governor Foss on the Massachusetts Railroad Problem.

Governor Eugene N. Foss, of Massachusetts, in his inaugural address, called for immediate action looking to rigid regulation of railways, declaring this to be the alternative to national ownership and operation of the railroads of the country. He said:

"The greatest problem before the American people is to maintain the government above railroad domination. This problem has reached a crisis in Massachusetts. It is clear that if a commonwealth does not control the railroad situation the demand for control by ownership and operation by the federal government will soon become irresistible.

"The only way to postpone government ownership is to retain in the commonwealth the power to regulate the transportation system, to assert that power at once, and to apply it without delay."

Governor Foss urged the dissolution of the holding company, through which the New Haven controls the Boston & Maine. Continuing, he said:

"In my two previous inaugural addresses I urged upon the Legislature this dissolution, and the last Legislature appointed a commission to report to the next session upon the desirability of prohibiting holding companies in this Commonwealth. Since the appointment of that commission events have occurred which have brought into high relief considerations which far outweigh any arguments on one side or the other which that commission may adduce in support of its recommendations. . . . The expressed will of the people in the November election, the overt act of the New Haven [in the Grand Trunk matter] and the decisions of the Supreme Court of the United States are a combination which leaves no loophole for independent opinion on the part of the Legislature."

"If the Boston & Maine and the New Haven are not com-

peting lines, and if the people of New England believe that this section can best be served by a consolidation of these lines, then the full responsibility of such a combination should be assumed, and proper arrangements should be made in Greater Boston and elsewhere for bringing about an actual physical connection of these railroads. . . . Governor Foss would like to see the six New England States co-operate in their dealings with the railway problem.

Firemen's Wages.

The committee representing the eastern railroads on Monday of this week submitted to the representatives of the firemen a proposal that the questions of wages and other conditions now at issue between the companies and the men be settled mainly on the lines of the award recently made by the arbitration board in the matter of enginemen. The main feature of this offer is a minimum rate, but with modifications for locomotives weighing over 70 tons on the drivers. As in the case of the enginemen, the proposed schedule would increase the pay of firemen on many smaller roads, but not much on the larger systems. The principal rates are: passenger engines, \$2.40 per 100 miles; over 70 tons and up to 87½ tons, 10 cents additional; 87½ tons and over, 15 cents additional, but with a maximum of \$2.70. Through freight, \$2.75; engines weighing over 70 tons, 10 cents additional, with a maximum of \$3; engines weighing over 87½ tons, 15 cents additional with a maximum of \$3.25; switching engines \$2.45. Mr. Carter, president of the firemen, in a letter written on Tuesday rejected the offer of the companies and suggested that no more time be lost in "useless conferences," but that matters be at once submitted to arbitration under the Erdman act. He said that the firemen would waive the clause in that act requiring a settlement in thirty days and would be willing to make the time limit sixty days. He submitted a tentative draft of an agreement to arbitrate. The roads replied that they wanted seven arbitrators, not three, which is the number provided for by the Erdman act.

Guyandot Bridge Failure.

The failure of a bridge at Guyandot, W. Va., on the Chesapeake & Ohio, January 1, was noticed in our last issue, page 28. An officer of the road sends us the following details of the accident:

"This bridge is about three miles east of Huntington, W. Va. It has heretofore consisted of three iron, single-track, through-truss spans, each about 150 ft. long, erected about twenty years ago. On account of the introduction of heavier engines these spans are being replaced by heavier steel, double track, through truss spans. Traffic continues to move over the bridge during the erection of the new spans. The west span was completed about December 1. The trusses of the middle or channel span had been taken down and the track and floor system of the new span were carried on falsework. This falsework consisted of piles driven through 7 to 17 ft. of sand to bedrock. The third span of the old bridge at the east end had not been disturbed.

"The steel bridge was being erected by the railway company's forces, and the foreman in charge of the work as well as the general bridge foreman had been in the employ of the Chesapeake & Ohio for more than twenty years in their respective positions; were experienced, capable men and knew the character of the Guyandot river.

"On the day of the accident fifteen trains had passed over the bridge between 6 a. m. and the time of the accident, 10:40 a. m. The bridge was carefully watched by the bridge gang during the passage of all of these trains to see if there was any settlement. None was observed even when the train preceding the one that fell passed over the bridge, one hour previous to the accident. At that time there was nothing to indicate that the falsework had been undermined and there was no settlement at any point.

"The wrecked train was a westbound manifest freight, consisting of a Mikado locomotive and 39 loaded box cars; and while it was crossing the bridge at a speed of four or five miles an hour the falsework suddenly settled on the up-stream side, and the engine and one car turned over up-stream and fell into the river, carrying the falsework down with them.

"The Guyandot river enters the Ohio about one mile below the bridge. The track is 55 ft. above low water, and 75 ft. above bed rock. Ordinarily there is but little current in the Guyandot at this point, but snow and rains on December 30 had caused a rise in the river, so that on January 1 it was about 8 ft. above

low water mark, and the Ohio being low, there was a swifter current in the Guyandot than at any time since the track had been carried on falsework. The watershed of the Guyandot is heavily timbered and extensive logging operations have been carried on for many years. The logs are floated down the Guyandot and into the Ohio river, to be sawed at mills along that river. There were some logs running on the day of the accident, and it is believed that some oak or other heavy logs had lodged against the bottoms of the piles and caused eddies that undermined them, resulting in the accident.

"The engineman went down with the engine and was killed. Before crossing the bridge the train had been flagged by the bridgemen on the east side, and while it was standing there the fireman and one of the brakemen walked out on the bridge to the point where the bridge men were at work; and instead of returning to the east side to get on the train, they went to the west side, because it was a more convenient place to get on, and not through any fear they had of the bridge. These men fortunately were saved. At the time of the accident there were fifteen bridgemen on the bridge and six of them were carried down and were lost, making the total number of employees killed seven. One other employee had his hand broken, but there were no other injuries of importance. No persons other than these employees were killed or injured.

"The supervisor of bridges and buildings of the division, a man of forty years' experience, and especially well acquainted with this river, had examined the bridge before the passage of the wrecked freight train and pronounced it safe."

The John Fritz Medal.

The John Fritz medal of the four national engineering societies was presented to Captain Robert W. Hunt on Thursday evening, December 5, 1912, in the Engineering Society's building, New York, for meritorious work in connection with the development of the Bessemer process for the manufacture of steel. Captain Hunt is at the head of the Robert W. Hunt & Co. testing and inspection bureau of Chicago. He was born at Fallington, Bucks county, Pa., on December 9, 1838, and began work in a rolling mill at Pottsville, Pa. In 1860 he established the first chemical laboratory in America in connection with an iron and steel manufacturing plant, at the works of the Cambria Iron Company, Johnstown, Pa. Suspending this work temporarily while participating in the Civil War, he resumed it with the same firm in 1865 in an experimental Bessemer plant. He aided greatly in the development of the Bessemer process at various mills until 1888, when he organized the testing and inspection bureau bearing his name.

In addition to being president of the American Society for Testing Materials at the present time, Captain Hunt has been president of the American Institute of Mining Engineers at two different times, has been president of the American Society of Mechanical Engineers and of the Western Society of Engineers. He has given special attention in recent years to the steel rail problem and is one of the leading authorities on this subject.

Signals Imperfectly Displayed; Stop!

The Railroad Commission of Indiana has issued the following circular, and calls on the railways, steam and electric, to say that they will obey it:

"Information has come to the commission that many railroad companies have not required strict compliance with the rule that: 'A signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as a stop signal, and the fact reported to the proper official.' The proper construction of this rule is that when switch signal lights are found to be out, the train or car shall stop, the switch examined and the light relit. Trains or cars should stop in all cases where the lights are out; not slow down, but stop. The commission recommends that this strict construction of the rule shall be enforced by all companies."

This order seems to have been occasioned by the collision at Irvington, November 13. This collision occurred at 3 a. m., killing 15 persons. It was at a misplaced switch, a passenger train running into a freight train standing on a side track; and, according to the published reports, there was no light on the switch; and the line was straight so that the absence of the light should have been discovered by the engineman of the passenger train.

Western Society of Engineers.

The annual meeting of the Western Society of Engineers, Chicago, was held January 8-9. The annual dinner and business session was held on Wednesday evening. The new station of the Commonwealth Edison Company, in which 20,000 k. w. turbo-generator units, the largest in operation, have been installed, was visited on Wednesday, while on Thursday the new plant of the Corn Products Refining Company, Argo, Ill., was visited. The session closed with a smoker at the society's rooms on Thursday evening.

Albert F. Reichman, resident engineer of the American Bridge Company, New York, with office in Chicago, since 1900, and formerly in charge of the bridge engineering office of the Chicago, Milwaukee & St. Paul, was elected president of the club; A. Bement, first vice-president; B. E. Grant, second vice-president; J. H. Hayford, third vice-president; C. R. Dart, treasurer, and F. E. Davidson, trustee for three years.

Central Railway Club.

The annual dinner of the Central Railway Club, was held on January 9, at the Hotel Statler, Buffalo, N. Y. The speakers comprised Riley Williams, vice-president of the Schuylkill & Canastota Valley Railroad; George M. Basford, of the American Locomotive Company, New York; A. J. Grymes, manager of the marine department of the Erie; William McClellan, electrical engineer of the New York Public Service Commission, Second district; and the Hon. Devoe T. Hudson, Buffalo, N. Y.

American Society of Mechanical Engineers.

At the meeting of the American Society of Mechanical Engineers, to be held January 14, there will be a report of the committee on meetings in New York, followed by a discussion of this report. F. A. Waldron, industrial engineer, will then present a paper on the numerous phases of scientific management not closely related to labor problems. This paper will be followed by a discussion. An informal dinner will precede the meeting.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Convention, May 6-9, St. Louis, Mo.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Annual meeting, June 17-20, Buffalo, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and September.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.

AMERICAN ELECTRICAL RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next meeting, May 21, New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-23, 1913, Montreal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Convention, March 18-20, 1913, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 11-13, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Convention, January 21-23, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago. Next meeting, May, 1913, Baltimore, Md.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual meeting, June, 1913, Atlantic City, N. J.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago; annual, May 20, 1913, St. Louis, Mo.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, June 18, Bluff Point, N. Y.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual meeting, May, 1913, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, Chicago & North Western, Escanaba, Mich. Next convention, July 22-25, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Annual meeting, August 18, Richmond, Va.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Convention, May 26-29, 1913, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 16-18, Atlantic City, N. J.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Annual meeting, September 9-12, Ottawa, Can.

NATIONAL RAILWAY APPLIANCES' ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d Tuesday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo. Next meeting, August 12-15, Nashville, Tenn.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City, Southern, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Meetings, March 17, Chicago; June 10-11, New York; convention, October 14, Nashville, Tenn.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio. Annual convention, May 19-21, Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assoc.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Convention, September 8-12, 1913, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La. Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala. Next meeting, April 17, Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago. Annual meeting, June 17, Los Angeles, Cal.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, August, 1913, Chicago.

UTAH SOCIETY OF ENGINEERS.—R. B. Ketchum, University of Utah, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

The Wells-Fargo Express Company announces at San Francisco that it will soon make rates to compete with the new parcel rates of the post office department.

For the convenience of the growing Yellowstone Park and Pacific northwest travel, arrangements have been made by the Denver & Rio Grande with the Oregon Short Line to interchange passengers passing through Colorado and Utah at Salt Lake City without extra charge. The Ogden interchange will also continue as heretofore. This new arrangement becomes effective February 1.

Industrial Commissioner P. H. Burnett, of the Lehigh Valley, announces a two-day meeting of farmers in the court house at Towanda, Pa., January 10 and 11. E. H. Dollar, president of the New York State Dairymen's Association, and others, will tell of up-to-date farming methods; and the problems of farmers' wives will be discussed by Miss Martha Van Rensselaer, of Cornell University.

On January 6 a daily time table for a "Seeing the Canal" train was put in effect on the Panama Railroad. On three days of the week it provides for a trip over the Pacific division in the morning, and through Culebra Cut in the afternoon. On the return from the Pacific division trip a lecture, illustrated by the use of models, is delivered at the tourist station at Ancon. On three days of the week the trip includes a visit to Gatun.

The Lehigh Valley and the New York, Chicago & St. Louis were fined \$1,000 each by the federal court at Chicago on December 30, on charges of paying rebates to A. Booth & Co., Chicago, on shipments of fish and oysters, Booth & Co. having been fined a similar amount some time ago. The Chicago, Rock Island & Pacific and the Illinois Central were also fined \$1,000 each on charges of issuing annual passes instead of trip passes to care-takers in charge of banana shipments from the south to Chicago.

J. M. Daly, general superintendent of transportation of the Illinois Central, addressed the Traffic Club of Chicago at its monthly luncheon on January 8, on the subject of "Car Efficiency." The programme of the entertainment committee of the Traffic Club provides for a ladies' night on January 14, and a monthly luncheon on January 22, at which Professor P. G. Holden, director of the agricultural extension department of the International Harvester Company, will speak on "Greater Efficiency in Agricultural Production."

The Industrial Bureau of the New England Lines, which is run by the New York, New Haven & Hartford and the Boston & Maine, jointly, reports that during the first 18 months of its activities 68 new manufacturing concerns have been established in New England, employing 3,600 persons and representing an investment of over \$2,600,000. A circular has been issued giving the names and locations of some of the principal new industries. The manager, W. H. Seeley, says that the local boards of trade have very effectively co-operated with the bureau.

The number of freight cars moved over the Middle division of the Pennsylvania Railroad in the twelve months of 1912 is reported as 2,075,912, this being the count made of the cars in trains passing Denholm. This is less than the number recorded in 1907, which was 2,225,789, but the tonnage has been greater during the past year, as an overwhelming majority of the cars now carry about 50 tons, whereas five years ago 20-ton, 30-ton and 40-ton cars were common. The heaviest freight movement of the past year was in March, when the number of cars recorded was 203,920.

Robert E. Strahorn, for several years past prominently connected with the Harriman Lines in Oregon, and now one of the vice-presidents of the Oregon-Washington Railroad & Navigation Company, was this year chosen president of the National Apple Show at Spokane, an instance of amicable relations between the mercantile community and railroad officers quite in contrast with those in some other parts of the country—New England, for instance. Mr. Strahorn not only presided with acceptance over the doings of the annual apple exhibit, but was also the leader in a new and forward step, viz., in securing the

co-operation of prominent men in the apple growing industry, in effecting a permanent organization which called a convention for December 16, to consider means of improving the marketing and distribution of the fruit products of the northwest. Something of this kind had become an absolute necessity, because of the very rapid increase in the fruit production of Washington, Oregon and Idaho. The convention of December 16 brought together 400 representatives of the fruit growing interests, as well as a large number of prominent railway officers. These fruit growers are dyed-in-the-wool shippers, and Mr. Strahorn frankly told them that he was likely to say or do things which would not please men who had always looked upon reductions in freight rates as the most important desideratum in their business; but they stood pat, unanimously, and Mr. Strahorn is at the head of a committee of nine, which is to take up the questions indicated.

"Progressive" Commissioners.

"Suspends freight advances" is a headline relating to the work of the Interstate Commerce Commission that has become so familiar of late as almost to warrant keeping it standing in type. The suspensions thus effected have usually been crystallized into refusals to permit the advances referred to to take effect. If the commission would use somewhat greater discrimination in its action, there would be greater confidence that the policy of holding rates down was being applied with wisdom and in a way that would not damage the carriers' best interests. Recent indications that the commission is again divided within itself with regard to the general freight rate question show the difficulty of the subject. The so-called "progressive" element in the body needs to proceed with caution in order that it may not incur the danger of having its policy reversed instead of modified, in consequence of public demand.—*Journal of Commerce, New York.*

Summary of Revenues and Expenses of Steam Roads in October.

The Bureau of Railway Economics' summary of revenues and expenses and comments thereon for October are as follows: The railways whose returns are included in bulletin No. 42 operate 220,636 miles of line, or about 90 per cent. of all the steam railway mileage of the United States. The total operating revenues for the month of October, 1912, amounted to \$290,795,383. This includes revenues from freight and passenger traffic, from carrying mail and express, and from miscellaneous sources. Compared with October, 1911, the total operating revenues of these railways show an increase of \$34,986,768. These total operating revenues per mile of line amounted to \$1,318 in October, 1912, and \$1,177 in October, 1911, an increase for 1912 of \$141, or 12.0 per cent. This increase was the resultant of increases in each revenue account as follows: freight revenue, 14.8 per cent.; passenger revenue, 3.5 per cent.; other transportation revenue, 8.6 per cent.; non-transportation revenue, 21.4 per cent.

Operating expenses, which include all the costs of maintaining track and equipment, operating trains, securing traffic, and of administration, amounted in October to \$183,354,865. This was \$20,116,643 more than for October, 1911. These operating expenses per mile of line amounted to \$831 in October, 1912, and \$751 in October, 1911, an increase for 1912 of \$80 per mile, or 10.7 per cent. Four of the five primary operating expense accounts showed increases in 1912. In the cost per mile of maintaining way and structures, i. e., track and buildings, there was an increase of 11.6 per cent.; in the cost per mile of maintaining equipment an increase of 14.9 per cent.; in transportation expenses per mile an increase of 9.5 per cent., and in general expenses per mile an increase of 5.4 per cent. Traffic expenses per mile decreased 1.3 per cent.

Net operating revenue, that is, total operating revenues less operating expenses, amounted in October to \$107,440,518. This was \$14,870,125 more than for October, 1911. Net operating revenue per mile of line amounted to \$487 in October, 1912, and \$426 in October, 1911, an increase for 1912 of \$61 per mile, or 14.4 per cent. The net operating revenue for each mile of line for each day in October averaged \$16, and for October, 1911, \$14. It should be recalled that net operating revenue represents gross income before anything has been taken out for taxes, rentals, interest on bonds, appropriations for betterments, or dividends.

Taxes for the month of October amounted to \$10,281,961, or \$47 per mile, an increase of 2.8 per cent. over October, 1911.

The operating ratio for October, that is, the per cent. of total operating revenues which was absorbed in operating expenses, was 63.1 per cent., which is comparable with 64.3 per cent. in September, 1912, and 63.8 per cent. in October, 1911.

The eastern group of railways shows an increase in total operating revenues per mile of line as compared with October, 1911, of 11.8 per cent., the southern group an increase of 8.9 per cent., and the western group an increase of 13.4 per cent. Operating expenses per mile increased 11.0 per cent. on the eastern railways, 9.6 per cent. on the southern railways, and 10.9 per cent. on the western railways.

For the eastern group of railways net operating revenue per mile increased 13.4 per cent., for the southern group it increased 7.3 per cent., while for the western group it increased 17.2 per cent.

The increase in taxes per mile was 5.0 per cent. in the southern group, and 7.2 per cent. in the western group; in the eastern group there was a decrease of 2.2 per cent.

Comparison of the returns for the four months of the fiscal year with those of the corresponding months of the previous fiscal year reveals an increase in total operating revenues per

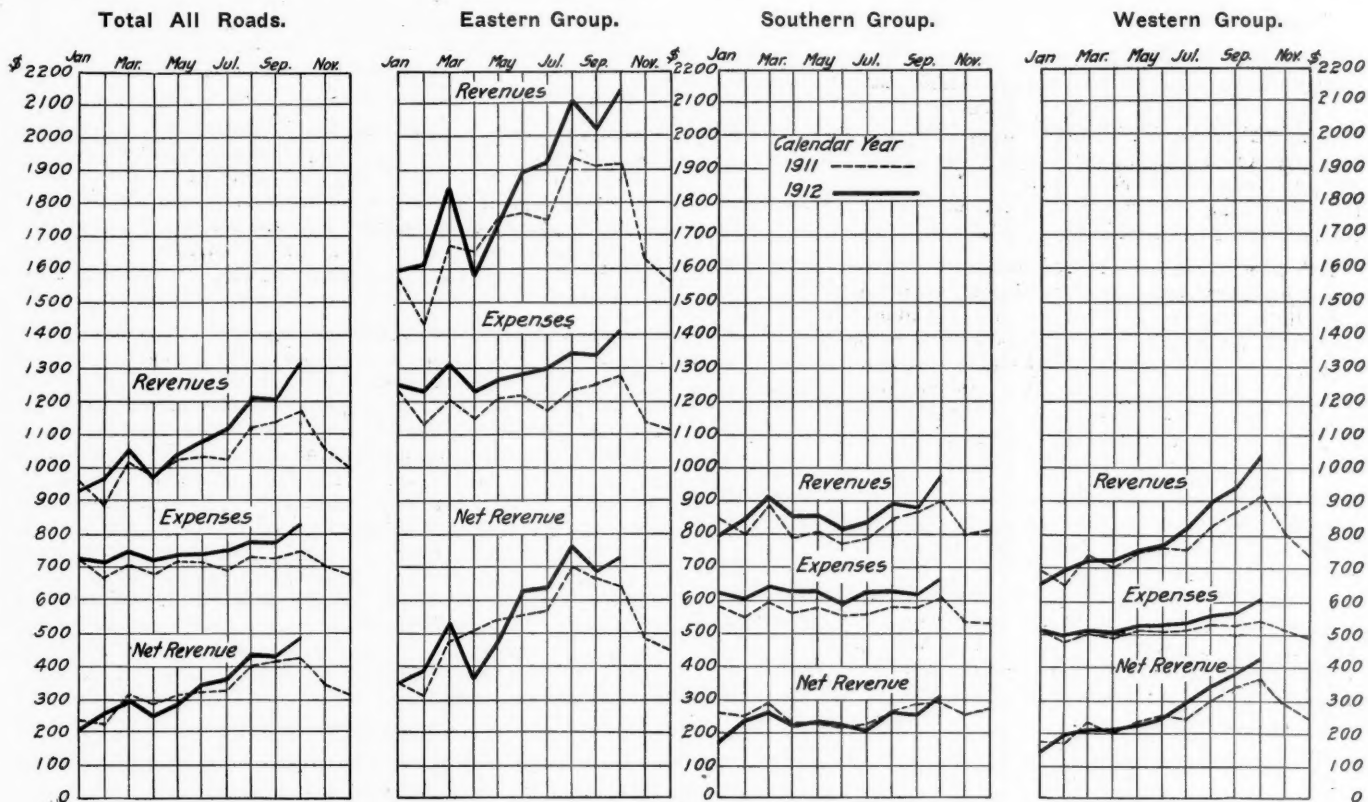
year 1912 to date. The following table shows the per cent. of operating revenues consumed by each class of expenses:

	PER CENT. OF TOTAL OPERATING REVENUES.					
	October,		Fiscal year ended June 30,		Calendar year ended December 31,	
	1912.	1911.	1912.	1911.	1911.	1910.
Maint. of way and structures.....	12.5	12.5	12.7	12.9	12.7	13.3
Maint. of equipment	14.9	14.5	15.8	15.5	15.5	15.3
Traffic expenses	1.7	1.9	2.2	2.2	2.1	2.1
Transportation expenses	32.0	32.7	35.9	35.5	35.4	34.7
General expenses	2.0	2.2	2.5	2.5	2.6	2.4
Total operating expenses.....	63.1	63.8	69.1	68.6	68.3	67.8

INTERSTATE COMMERCE COMMISSION.

The commission has suspended until April 25 certain schedules in F. A. Leland's tariff, which advance the rate for the transportation of cotton linters from points in Texas to Minneapolis, Minn., and other points.

The commission has further suspended the supplement to the tariff of the Tennessee Central, which advances rates for the



Monthly Revenues and Expenses Per Mile of Line in 1911 and 1912.

mile of 9.0 per cent., an increase in operating expenses per mile of 8.2 per cent., and an increase in net operating revenue per mile of 10.3 per cent. This net operating revenue per mile of the eastern group of railways increased 9.2 per cent., as compared with the corresponding period of the previous fiscal year, and that of the western group increased 15.1 per cent., while that of the southern group decreased 1.9 per cent.

When the returns for the ten months of the calendar year 1912 are compared with those of the corresponding months of 1911, they show an increase in total operating revenues per mile of 5.2 per cent., an increase in operating expenses per mile of 6.0 per cent., and an increase in net operating revenue per mile of 3.5 per cent. There was an increase in net operating revenue per mile of 4.3 per cent. in the eastern group, an increase of 6.1 per cent. in the western group, and a decrease of 5.5 per cent. in the southern group.

The diagram shows the variations in total operating revenues, operating expenses and net operating revenue per mile for the several months of the calendar year 1911 and of the calendar

transportation of phosphate rock, in bags, from points in Tennessee to Norfolk, Va., and other points.

The commission has further suspended from January 2, until February 15, certain tariffs, which advance rates for the transportation of salt from Kansas points to stations located on the Wichita Falls & Northwestern in the state of Oklahoma.

The commission has further suspended from December 31, until June 30, schedules in certain tariffs, which advance rates for the transportation of various commodities from eastern shipping points to points in California, Oregon, Washington and British Columbia.

The commission has further suspended from December 30, until June 30, certain tariffs which advance rates for the transportation of lumber, in carloads, from producing points in Tennessee, Mississippi and other states to destinations north of the Ohio river and to Canadian destinations.

The commission has further suspended from December 30, until June 30, the supplements to tariffs of the Chesapeake

& Ohio and the Norfolk & Western, which advance rates for the transportation of pig iron, in carloads, from Buena Vista, Va., and other points to Philadelphia, Pa., and other destinations.

The commission has suspended from January 1, until March 31, an item in a supplement to the tariff of the Minneapolis & St. Louis, which advances rates for the transportation of flax tow, flax moss, and flax fiber from St. Paul, Minn., and other points to St. Louis, Mo., and other points. The present rate from St. Paul to St. Louis is 12½ cents per 100 lbs., and the proposed rate 18 cents per 100 lbs.

The commission has suspended from January 1, until May 1, various items in Hosmer's tariff, which advance rates for the transportation of butter and eggs, in carloads and less than carloads, from Topeka, Kan., to Mississippi river crossings and stations in Illinois, Indiana and Kentucky. The advances which have been suspended amount to about 11 cents per 100 lbs. on carloads and 15 cents on less than carloads.

The commission has suspended, until May 1, certain tariffs, which advance rates for the transportation of some twenty commodities between Missouri river points. Taking Omaha and Kansas City as representative points, the advances on certain commodities are as follows: Sulphuric acid, 2½ cents per 100 lbs.; blue vitriol, 2½ cents per 100 lbs.; canned goods, 2½ cents per 100 lbs.; furniture, 3 cents per 100 lbs., and malt, 7½ cents per 100 lbs.

Confirming the general principle of an order entered and announced on January 26, 1911, the commission has held that when a carrier, in obedience to the requirements of the Fourth Section, has, after August 17, 1910, corrected discriminations against intermediate points, it may not lawfully restore such discriminatory rates unless, upon formal application, the commission finds justifying circumstances and authorizes a deviation from the long and short haul rule.

The commission has ordered that an inquiry be held into the rates, practices, rules and regulations of the Great Northern, the Duluth, Missabe & Northern, and the Duluth & Iron Range, governing the transportation of iron ore from producing fields in the state of Minnesota to the docks at Duluth, Minn., and Superior, Wis., when destined to points beyond the docks and without the state of Minnesota, and when such transportation forms a part of the carriage of such ore to a point or points without the state of Minnesota.

The commission announces that as a result of correspondence with the Pennsylvania Railroad relative to complaints received from New York, Pennsylvania, Maryland and Wisconsin, directed against the recent order of the Pennsylvania Railroad forbidding the presence of blind persons on the railroad company's passenger trains, unless accompanied by a caretaker, the road has modified its rule so that blind persons who are capable of traveling alone will not be required to have a caretaker, and they will be assisted by station men and trainmen when necessary.

Complaint Dismissed.

French Paper Company et al. v. Michigan Central et al. Opinion by the commission:

The commission found that the rate of \$1.90 per net ton on bituminous coal from points in West Virginia to Niles, Mich., was not shown to have been unreasonable.

Lindsay Brothers v. Pere Marquette. Opinion by the commission:

The complainant contended that the defendant's rate and minimum weight for the transportation of sleighs in carloads from Wayne, Mich., to Milwaukee, Wis., was unreasonable and unduly discriminatory. The commission found that the evidence was not conclusive. (25 I. C. C., 368.)

Corporation of the Cathedral of the Incarnation v. Long Island Railroad. Opinion by the commission:

In taking advantage of the low price of coal, the complainant ordered at one time an unusual quantity of coal for delivery upon its private siding. Due to the lack of facilities for accommodating the unusual number of cars delivered, certain demurrage charges were assessed, which the complainant alleges were unjust and unreasonable. The commission found that the de-

fendants can not be required to be at all times prepared to furnish more than the reasonable facilities necessary for the usual amount of business done at a particular point upon its line, and in this case it can not be said that such facilities were not furnished the complainant. (25 I. C. C., 399.)

Board of Railroad Commissioners of the State of Montana v. Chicago, Burlington & Quincy et al. Opinion by the commission:

The commission found that the double first-class rating applied to the transportation of two rocking chairs, set up, with rockers detached and tied to back, from Lincoln, Neb., to Helena, Mont., was not excessive or unreasonable. (25 I. C. C., 371.)

Ford Manufacturing Company v. Illinois Central, et al. Opinion by the commission:

The complainant contends that the rate of 27½ cents per 100 lbs. for the transportation of roofing paper from Vandalia, Ill., to Toronto, Ont., is unreasonable and seeks reparation. The commission found that the evidence was not conclusive. (25 I. C. C., 432.)

In re investigation and suspension of advances in rates by carriers for the transportation of petroleum oil and other commodities from Wellsville, N. Y., and other points to Cincinnati, Ohio, and between other points.

The proposed increased rates on petroleum and its products from refineries in the so-called Buffalo group to points in southern Ohio and Indiana were found to be unreasonable and unjustly discriminatory. The tariffs under suspension are required to be withdrawn. (25 I. C. C., 349.)

Fullerton Lumber & Shingle Company, Limited, v. Bellingham Bay & British Columbia et al. Opinion by the commission:

Unjust discrimination, if any, in combination rates charged for the transportation of lumber from points in Washington to points in Canada exists wholly as to the rates for transportation in Canadian territory, over which this commission has no jurisdiction. The joint rates complained of were not found to be unreasonable. (25 I. C. C., 376.)

Wisconsin Lime and Cement Company v. Cleveland, Cincinnati, Chicago & St. Louis et al. Opinion by the commission:

The complainant contracted for the delivery at Englewood, Ill., of paving brick to be shipped over defendants' lines from Danville, Ill. At the time of the contract there was a published rate of 65 cents per ton on the traffic in carloads, from Danville to Englewood, and a part of the brick was moved under that rate. By permission of the commission, upon application by defendants, the rate was increased to 80 cents per ton upon five days' public notice, and the remainder of the brick was moved under the increased rate. Damages are claimed in an amount equivalent to the additional charges which the complainant was required to pay. The commission found that as no violation of the act to regulate commerce by defendants was shown, no grounds exist for an award of damages. (25 I. C. C., 366.)

Reparation Awarded.

A. Leach v. Northern Pacific et al. Opinion by the commission:

The commission found that the charges assessed on an emigrant movable outfit, including 15 head of live stock, loaded into a single car, were unreasonable in that they exceeded the tariff charges for two cars of emigrant movables. (25 I. C. C., 275.)

Arabol Manufacturing Company v. South Brooklyn Railway et al. Opinion by the commission:

Joint rates for the transportation of seventeen carloads of sizing from Bedford, N. Y., via Weehawken, N. J., to Carthage and other New York points were found to have been unreasonable to the extent that they exceeded the aggregate of the intermediate rates. (25 I. C. C., 429.)

Conifer Lumber Company v. Louisville & Nashville et al. Opinion by the commission:

The commission found that the routing instructions on a carload of lumber shipped from Brewton, Ala., to New Haven, Conn., and reconsigned to East Cambridge, Mass., were not followed and that the complainant had been deprived of its privilege of reconsigning the shipment through action of the Baltimore & Ohio Southwestern, and that therefore the shipment had been misrouted. (25 I. C. C., 272.)

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF NOVEMBER, 1912.

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total.	Misc.	Way and structures.	Maintenance of equipment.	Traffic.	Transportation.	General.	Total.			
Alabama & Vicksburg.....	143	\$109,321	\$39,338	\$148,659		\$25,064	\$32,444	\$3,757	\$52,403	\$7,710	\$121,378	\$7,225	\$30,247	—\$10,167
Atchison, Topeka & Santa Fe.....	8,202 ¹	6,090,872	2,128,252	8,219,124		1,370,126	1,331,479	169,679	2,452,439	158,323	5,482,039	339,176	3,040,193	147,882
Arizona Eastern.....	366	174,528	38,869	213,397		21,317	16,275	2,472	58,789	13,404	112,257	5,096	109,171	53,502
Ann Arbor.....	292	117,858	44,354	162,212		17,385	22,853	4,297	65,424	4,796	123,937	13,930	35,454	20,891
Atlanta, Birmingham & Atlantic.....	662	221,249	44,460	265,709		29,427	48,364	15,045	103,972	12,785	223,613	13,875	56,785	—982
Atlantic & St. Lawrence.....	167	98,721	24,325	123,046		13,911	11,174	3,940	60,759	3,361	129,340	7,314	—2,743	—9,873
Atlantic City.....	167	64,971	51,344	116,315		33,492	12,129	1,706	74,495	1,129	123,422	9,000	—12,270	7,706
Atlantic Coast Line.....	4,611 ²	2,157,541	685,171	2,842,712		419,036	461,224	53,680	1,072,006	73,731	2,080,197	225,000	866,031	—63,409
Baltimore & Ohio—System.....	4,455 ³	7,311,265	1,201,298	8,512,563		1,231,623	1,502,487	161,716	3,251,808	171,289	6,318,923	255,764	2,434,026	503,659
Bangor & Aroostook.....	631 ⁴	216,214	58,172	274,386		48,429	33,782	3,165	88,778	9,244	183,398	10,500	93,069	4,882
Bessemer & Lake Erie.....	204	643,632	25,695	669,327		81,857	130,459	10,024	199,374	9,645	401,359	15,000	263,489	75,387
Boston & Maine.....	2,244 ⁵	2,979,063	1,220,575	4,200,638		534,557	646,297	30,540	1,955,756	95,487	3,262,646	183,090	574,199	—250,528
Buffalo & Susquehanna R. R.....	265	141,553	8,286	149,839		154,228	58,431	1,005	33,586	5,843	113,616	2,200	38,412	4,660
Buffalo & Susquehanna Rv.....	91	43,763	8,950	52,713		12,978	26,769	380	22,472	2,618	65,217	1,500	—11,682	—4,675
Butte, Rochester & Pittsburgh.....	574 ⁶	792,141	87,331	879,472		132,328	187,635	11,578	307,753	18,403	657,697	20,000	18,597	22,320
Butte, Anaconda & Pacific.....	46	93,338	10,707	104,045		11,460	22,330	615	55,762	3,048	93,215	2,000	18,597	11,800
Canadian Pacific Lines in Maine.....	233	56,499	30,583	87,082		20,071	13,787	6,478	39,152	5,065	84,553	10,000	1,004	15,270
Carolina, Clinchfield & Ohio.....	238	198,242	12,978	211,220		15,252	25,063	6,412	35,297	8,261	90,285	8,000	116,796	21,363
Carolina, Clinchfield & Ohio Ry. of S. C.....	18	12,311	1,658	13,969		829	138	1,041	2,474	401	4,883	500	8,735	1,642
Central of Georgia.....	1,915	828,772	312,065	1,140,837		185,909	207,767	39,533	420,398	37,436	891,043	46,430	325,575	35,263
Central of New Jersey.....	669 ⁷	1,823,540	414,449	2,237,989		204,811	325,905	28,049	741,726	43,075	1,343,566	65,904	944,607	76,267
Central New England.....	277	271,481	25,030	296,511		46,140	27,663	3,118	118,765	2,748	158,323	10,000	142,300	—14,881
Charleston & Western Carolina.....	341	129,487	3,673	133,160		25,695	19,533	1,171	61,830	4,754	115,103	5,000	50,124	16,804
Chesapeake & Ohio Lines.....	2,315 ⁸	2,361,665	438,950	2,800,615		353,193	646,745	56,890	948,834	63,611	2,062,273	102,155	762,079	—6,660
Chicago & Alton.....	1,026	955,667	308,348	1,264,015		212,294	326,894	40,649	512,671	34,420	1,132,928	38,000	185,626	11,909
Chicago & Eastern Illinois.....	1,275	1,085,660	230,139	1,315,800		171,288	278,043	26,579	522,394	42,268	1,040,552	50,000	339,046	6,597
Chicago & Northwestern.....	7,970 ⁹	4,878,551	1,633,053	6,511,604		881,118	940,090	106,879	2,715,401	127,718	4,711,322	303,000	2,085,835	532,309
Chicago, Burlington & Quincy.....	9,123 ¹⁰	6,170,568	1,739,226	7,909,794		1,328,959	1,328,959	123,689	2,538,251	194,583	4,950,328	337,743	896,510	896,510
Chicago Great Western.....	1,496	827,364	258,617	1,085,981		144,113	161,764	44,668	388,713	35,191	438,443	35,000	296,285	67,030
Chicago, Indiana & Southern.....	359	343,803	24,309	368,112		44,786	85,831	6,329	119,087	9,182	265,215	20,000	95,593	80,891
Chicago Junction.....	12	169,348	20,938	190,286		20,938	13,395	1,064	80,398	3,737	119,532	374	49,442	11,404
Chicago, Milwaukee & Puget Sound.....	2,081 ¹¹	1,597,490	290,659	1,888,149		1,946,021	216,493	43,668	604,549	79,258	1,006,378	75,000	872,373	382,826
Chicago, Milwaukee & St. Paul.....	7,511	4,894,052	1,225,354	6,119,406		807,003	986,579	111,031	2,541,630	79,258	4,525,501	236,687	1,957,774	680,887
Chicago, Peoria & St. Louis.....	285	114,891	62,749	177,640		30,349	5,652	7,013	74,899	5,652	151,963	4,300	7,121	23,580
Chicago, Rock Island & Gulf.....	477	296,921	26,531	323,452		27,844	34,400	9,947	100,664	7,853	170,717	5,595	200,392	82,531
Chicago, Rock Island & Pacific.....	7,566 ¹²	4,041,537	1,559,088	5,600,625		945,527	857,066	153,352	2,394,230	133,182	4,483,358	246,848	1,207,589	—9,802
Chicago, St. Paul, Minneapolis & Omaha.....	1,714	1,060,964	423,078	1,484,042		182,567	253,332	29,333	580,414	31,112	1,040,756	68,885	468,806	42,113
Cincinnati Northern.....	245 ¹³	1,000,964	1,120	1,002,084		13,602	16,252	2,667	52,981	2,899	88,400	38,458	23,015	315,667
Cleveland, Cincinnati, Chic. & St. Louis.....	2,011	1,400,620	608,996	2,009,616		294,345	530,103	71,414	1,110,110	61,52	2,067,124	115,000	810,663	315,667
Colorado Midland.....	338	142,308	17,251	159,559		17,709	27,355	6,510	68,622	5,701	125,897	10,000	40,859	1,774
Colorado & Southern.....	1,073 ¹⁴	694,342	98,888	793,230		111,722	154,525	9,887	234,451	21,446	531,731	29,175	276,493	25,526
Cumberland Valley.....	162	226,449	56,649	283,098		58,603	37,466	4,443	97,993	7,287	205,792	5,612	84,374	1,791
Delaware & Hudson Co.—R. R. Dept.....	854 ¹⁵	1,640,617	209,780	1,850,397		171,165	238,27	709,170	984,338	53,295	1,244,169	49,000	632,567	648
Delaware, Lackawanna & Western.....	959 ¹⁶	2,764,410	656,500	3,420,910		422,566	489,730	63,900	1,156,492	67,340	2,200,028	1,421,144	240,506	240,506
Denver, Northwestern & Pacific.....	215	71,659	13,245	84,904		89,533	15,675	1,505	31,438	3,854	67,503	3,500	20,530	5,916
Detroit & Mackinac.....	411 ¹⁷	61,976	29,540	91,516		15,023	13,924	2,190	33,628	3,050	67,815	9,409	21,936	5,513
Detroit, Toledo & Ironton.....	441	130,591	12,782	143,373		38,781	22,647	2,878	71,349	4,839	140,494	6,000	8,549	—10,582
Detroit, Grand Haven & Milwaukee.....	191	146,000	63,000	209,000		65,324	25,126	6,814	113,771	4,886	215,921	2,953	20,065	—9,191
Detroit River Tunnel.....	2	341,249	23,279	364,528		98,963	2,917	74	8,142	74	13,483	4,500	80,980	636
Duluth & Iron Range.....	274 ¹⁸	341,249	23,279	364,528		79,862	65,250	747	114,007	9,572	269,438	16,739	92,755	41,308
Duluth, Missabe & Northern.....	351 ¹⁹	609,314	37,835	647,149		70,094	77,686	1,967	146,731	13,583	310,871	26,901	322,279	229,226
El Paso & Southwestern Co.....	823 ²⁰	585,709	87,250	672,959		77,936	89,089	13,006	177,991	23,285	388,207	34,438	270,592	13,886
Elgin, Joliet & Eastern.....	823 ²¹	1,058,280	1,127,644	2,185,924		18,698	156,583	4,932	307,392	6,176	603,721	510,590	209,391	209,391
Florida East Coast.....	642 ²²	214,903	110,033	324,936		58,728	57,858	5,221	131,063	14,266	267,136	13,500	84,430	21,670
Fort Worth & Denver City.....	454	401,841	142,358	544,199		45,198	83,864	5,803	174,928	14,851	324,644	11,700	232,035	36,902
Galveston, Harrisburg & San Antonio.....	1,338	714,629	264,668	979,297		118,107	190,401	35,079	390,471	33,986	767,984	31,177	236,130	71,894
Georgia.....	307	197,084	75,454	272,538		34,635	53,608	11,018	140,001	8,053	267,315	2,978	40,203	—65,454
Georgia, Southern & Florida.....	395	128,131	67,111	195,242		34,682	39,274	7,356	88,641	9,982	179,873	14,075	29,426	—14,690
Grand Rapids & Indiana.....	578 ²³	283,195	134,516	417,711		66,373	67,053	12,941	184,145	15,815	346,327	234	82,562	37,320
Grand Trunk Western.....	347	421,000	186,000	607,000		81,647	94,611	21,007	256,274	18,104	471,377	29,877	143,394	45,806
Great Northern.....	7,712 ²⁴	6,135,699	1,336,378	7,472,077		715,254	759,893	102,244	2,034,130	100,988	3,712,509	342,855	3,872,089	751,295
Gulf & Ship Island.....	308	127,959	31,047	159,006		28,170	34,433	3,544	44,114	8,305	118,569	5,040	47,793	—9,832
Gulf, Colorado & Santa Fe.....	1,596 ²⁵	1,078,097	261,025	1,339,122		167,929	182,799	26,069	494,860	40,444	912,101	36,838	462,378	83,785
Hocking Valley.....	352 ²⁶	572,357	72,446	644,803		68,440	124,502	8,992	196,111	13,094	430,096	44,400	215,300	5,675
Houston, East & West Texas.....	191	85,143	15,608	100,751		37,519	37,519	1,483	37,519	3,009	89,949	3,278	31,928	3,278
Houston & Texas Central.....	789	406,095	167,703	573,798		103,107	112,586	16,809	239,640	14,225	486,367	15,756	111,063	39,503

Average mileage operated during previous period—¹ 7,613; ² 4,513; ³ 4,434; ⁴ 628; ⁵ 2,225; ⁶ 572; ⁷ 672; ⁸ 2,242; ⁹ 7,764; ¹⁰ 9,074; ¹¹ 2,059; ¹² 7,551; ¹³ 246; ¹⁴ 1,107; ¹⁵ 852; ¹⁶ 930; ¹⁷ 358; ¹⁸ 263; ¹⁹ 328; ²⁰ 902; ²¹ 842; ²² 583; ²³ 587; ²⁴ 7,345; ²⁵ 1,603; ²⁶ 353. — Indicates Deficits, Losses and Decreases.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF NOVEMBER, 1912—(CONTINUED).

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total.	Maintenance of way and equipment.	Traffic.	Trans- portation.					
Illinois Central.....	4,763	\$3,727,575	\$1,089,729	\$5,499,158	\$743,642	\$116,573	\$2,135,387	\$1,157,716	-\$7,627	\$237,750	\$912,339	\$582,996
Indiana Harbor Belt.....	105 ²⁷	262,429	29,285	292,714	29,285	2,527	12,458	17,135	1,271	20,548	73,846	39,515
Lake Erie & Western.....	886	413,320	64,297	505,513	67,731	12,561	187,561	166,101	..	150,000	140,554	74,878
Lake Shore & Michigan Southern.....	1,873 ³⁵	3,305,613	877,334	4,233,153	558,755	103,966	1,494,389	1,668,862	7,866	150,000	1,554,728	326,069
Lehigh & Hudson River.....	97	141,474	3,722	153,132	153,132	1,280	56,583	55,199	.....	4,000	49,199	-4,965
Long Island.....	399	322,785	485,619	808,404	163,232	13,256	389,615	184,639	31,108	56,450	159,297	65,469
Louisiana & Arkansas.....	255	107,182	22,907	130,089	22,907	2,262	36,474	48,514	.....	3,833	44,681	-7,040
Louisiana Ry. & Navigation.....	351	130,429	27,295	157,724	23,885	5,585	79,333	30,936	.....	5,500	25,436	-35,746
Louisville & Nashville.....	4,723 ³⁰	3,831,400	988,187	5,155,587	857,824	111,755	1,624,967	1,533,532	-2,900	153,242	1,377,390	-46,223
Louisville, Henderson & St. Louis.....	200	69,114	31,089	107,125	27,662	4,696	37,598	20,083	415	37,000	17,498	-5,720
Maine Central.....	1,204 ³⁰	628,817	251,649	940,439	149,637	7,301	346,737	276,528	-1,861	42,876	231,791	14,113
Michigan Central.....	1,871 ³¹	1,957,022	636,042	2,898,481	338,939	69,980	1,164,360	880,537	7,318	106,000	781,855	-8,191
Midland Valley.....	373	94,995	43,654	145,826	35,152	2,345	46,812	34,178	188	5,468	28,898	-8,191
Minneapolis & St. Louis.....	1,586	675,776	138,476	861,159	125,056	16,247	325,329	273,673	-91	32,992	240,590	139,457
Minneapolis, St. Paul & Sault Ste. Marie.....	3,976 ³²	2,372,656	574,248	3,098,438	256,836	50,781	901,849	1,512,027	9,222	121,905	1,399,344	590,834
Missouri, Kansas & Texas System.....	3,816 ³³	2,766,580	840,516	3,293,224	379,698	65,683	1,109,836	1,270,143	-6,094	114,464	1,149,585	517,262
Missouri Pacific.....	3,920 ³⁴	1,811,571	407,578	2,419,692	427,536	64,867	1,039,835	370,827	-4,058	93,390	273,379	145,793
Mobile & Ohio.....	1,114	83,512	121,679	205,191	203,705	35,563	367,009	283,559	-1,148	29,859	258,552	-30,727
Monongahela.....	65	33,554	2,522	36,076	13,134	440	27,364	92,442	.....	3,000	89,342	30,966
Nashville, Chattanooga & St. Louis.....	1,231 ³⁵	822,473	231,669	1,131,080	165,142	40,210	425,851	263,327	-124	25,416	237,787	24,208
Nevada Northern.....	165	109,471	13,703	126,225	12,770	333	24,533	71,639	.....	5,960	65,679	17,274
New Orleans & North Eastern.....	196	245,709	51,576	318,682	34,387	9,350	121,886	72,070	210	13,900	58,380	-26,684
New Orleans Great Northern.....	283	89,774	28,177	131,203	23,800	6,785	40,781	41,409	-81	1,750	39,390	2,467
New Orleans, Mobile & Chicago.....	547 ³⁶	213,851	28,335	253,371	37,572	3,424	80,925	101,409	-148	4,155	97,106	30,233
New York Central & Hudson River.....	3,595 ³⁷	6,102,449	2,535,001	9,644,184	1,313,478	165,522	3,397,306	2,905,361	65,704	538,355	2,432,710	642,726
New York, Chicago & St. Louis.....	565 ³⁸	998,428	138,775	1,178,226	77,735	60,671	446,400	456,057	-2,410	36,000	417,647	110,168
New York, New Haven & Hartford.....	2,091	2,994,480	2,274,211	5,835,357	759,535	28,475	2,332,963	1,882,311	84,711	300,000	1,667,022	-50,738
New York, Philadelphia & Norfolk.....	112	226,608	38,173	286,790	24,996	4,298	123,332	67,970	.....	6,900	61,070	-1,412
Norfolk & Western.....	3,077 ³⁹	888,368	338,609	1,226,977	440,323	55,073	1,061,824	1,258,967	-2,137	120,000	1,138,830	61,769
Norfolk Southern.....	562	191,169	62,645	276,618	31,540	4,411	84,371	170,297	-731	7,510	96,280	62
Northern Central.....	473 ⁴⁰	859,370	196,416	1,133,298	92,184	16,808	529,308	241,306	173	82,898	158,581	-82,424
Northern Pacific.....	6,233 ⁴¹	5,485,959	1,271,573	7,136,248	705,096	94,235	2,108,774	3,436,813	25,847	311,834	3,150,826	642,583
Oregon & Washington R. R. & Nav. Co.....	1,919	1,145,098	401,195	1,546,293	240,672	45,330	580,332	538,389	-6,514	13,132	439,133	129,446
Oregon Short Line.....	1,583 ⁴²	383,850	378,531	762,381	194,195	27,615	521,283	1,096,702	-21	126,074	970,607	85,752
Pecos & Northern Texas.....	479 ⁴³	187,483	41,867	269,526	25,794	3,254	68,860	125,397	.....	2,450	122,937	78,604
Pennsylvania Co.....	1,751 ⁴⁴	4,665,915	769,271	5,937,102	1,311,329	87,191	1,986,622	1,555,420	-8,916	249,119	1,297,385	193,495
Pennsylvania Railroad.....	4,021 ⁴⁵	11,405,869	2,978,460	15,467,102	1,815,856	183,137	5,466,282	4,382,112	-109,921	603,269	3,378,922	-99,859
Philadelphia & Reading.....	1,015	3,597,486	577,072	4,390,411	413,887	60,457	1,956,855	1,873,506	31,973	85,946	1,819,533	200,314
Philadelphia, Baltimore & Washington.....	713	869,310	708,189	1,763,411	268,018	26,870	728,889	388,103	.....	60,403	327,700	-12,514
Pittsburgh & Lake Erie.....	221 ⁴⁶	1,429,752	136,559	1,622,499	153,455	25,559	372,424	816,345	-497	31,000	784,848	222,454
Pittsburgh, Cincinnati, Chic. & St. Louis.....	1,467	2,802,275	629,485	3,862,628	661,484	69,967	1,370,195	966,596	-586	143,123	822,887	12,757
Pittsburgh, Shawmut & Northern.....	279 ⁴⁷	148,640	8,720	159,358	20,613	994	50,915	47,942	.....	8,000	46,362	2,091
Port Reading.....	21	134,836	.....	134,836	11,691	193	37,445	87,165	10,136	13,193	89,301	3,065
Rutland.....	468	177,306	95,756	313,746	38,999	8,736	119,375	82,157	.....	13,193	68,964	-7,078
St. Louis, Iron Mountain & Southern.....	3,318 ⁴⁸	2,324,333	560,473	3,081,464	565,357	55,425	903,478	1,075,219	-4,271	90,795	980,153	94,660
St. Louis Southwestern.....	906 ⁴⁹	604,644	137,706	777,396	100,054	30,343	189,211	318,392	-969	24,058	293,355	-22,006
San Antonio & Arkansas Pass.....	727	321,897	120,976	464,346	67,901	6,210	167,933	153,151	.....	12,000	141,151	16,147
Southern.....	7,036 ⁵⁰	4,181,117	1,386,991	6,044,147	840,697	165,859	1,996,622	1,885,432	8,574	202,297	1,691,709	143,618
Southern in Mississippi.....	281	85,805	35,508	128,749	23,980	2,135	48,292	40,256	.....	6,762	33,494	-6,643
Southern Kansas of Texas.....	125	129,138	18,425	152,631	9,387	1,905	40,268	66,250	.....	861	35,389	24,056
Southern Pacific Co.....	6,317 ⁵¹	5,348,046	2,523,585	8,434,846	1,088,013	154,310	2,297,497	3,486,399	201,224	398,597	3,289,026	41,699
Spokane, Portland & Seattle.....	556 ⁵²	291,289	124,983	416,272	48,474	6,463	109,578	237,752	-1,756	53,400	182,596	-13,025
Tennessee Central.....	294	103,850	35,067	146,793	33,371	6,429	53,030	32,343	.....	4,265	28,278	9,785
Terminal R. R. Ass'n of St. Louis.....	34 ⁵³	291	266,276	267,291	15,063	942	95,738	105,301	.....	26,900	86,619	22,256
Texas & New Orleans.....	458	233,412	103,404	363,165	76,759	8,184	134,949	53,413	9,485	9,900	52,998	42,411
Texas & Pacific.....	1,885	1,467,145	398,065	1,953,759	190,238	35,193	782,424	656,014	4,077	55,160	604,931	13,568
Toledo & Ohio Central.....	443	424,518	90,146	514,664	37,082	6,912	151,530	299,495	-1,116	19,793	183,453	85,357
Toledo, St. Louis & Western.....	431	319,819	29,546	371,243	49,884	15,019	126,287	204,362	.....	14,800	110,912	42,753
Trinity.....	463	333,681	46,307	391,221	48,929	9,804	148,527	138,264	.....	4,150	134,114	65,063
Union Pacific.....	3,575 ⁵⁴	3,624,164	851,424	4,869,516	570,142	92,980	1,306,830	2,227,596	-6,987	186,897	2,033,712	324,899
Union R. R. of Baltimore.....	9	122,944	22,982	147,695	12,199	868	5,298	126,432	.....	7,000	121,187	13,850
Union R. R. of Pennsylvania.....	31	687,969	193,656	881,625	29,981	75,823	126,005	131,979	2,970	32,081	127,949	60,230
Vandalia.....	827	687,969	193,656	881,625	127,052	26,305	168,184	260,491	.....	32,081	228,410	60,230
Vicksburg, Shreveport & Pacific.....	171	96,985	50,099	159,416	26,383	3,345	42,799	53,217	-118	4,300	48,799	5,771
Virginia.....	474	422,660	21,064	456,682	62,448	4,736	108,490	182,302	4,749	17,400	169,651	34,379
West Jersey & Seashore.....	355	155,129	214,706	400,499	74,934	11,147	216,237	16,847	-3,304	11,099	57,963	2,444
Yazoo & Mississippi Valley.....	1,374	851,700	249,783	1,167,544	178,433	15,128	367,223	442,590	112	37,000	405,702	113,877

Average mileage operated during previous period: ²⁷ 103; ²⁸ 1776; ²⁹ 4,705; ³⁰ 1,180; ³¹ 1,805; ³² 3,770; ³³ 3,398; ³⁴ 3,916; ³⁵ 1,255; ³⁶ 404; ³⁷ 3,591; ³⁸ 562; ³⁹ 2,005; ⁴⁰ 472; ⁴¹ 6,019; ⁴² 1,689; ⁴³ 296; ⁴⁴ 1,416; ⁴⁵ 3,978; ⁴⁶ 215; ⁴⁷ 240; ⁴⁸ 3,314; ⁴⁹ 842; ⁵⁰ 7,089; ⁵¹ 6,184; ⁵² 551; ⁵³ 356. — Indicates Deficits, Losses and Decreases.

REVENUES AND EXPENSES OF RAILWAYS.

FIVE MONTHS OF FISCAL YEAR, 1913.

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total.	Maintenance of way and structures.	Equipment.	Traffic.	Trans- portation.				
Alabama & Vicksburg.....	143	\$506,841	\$213,682	\$720,523	\$112,391	\$132,564	\$18,156	\$261,696	\$218,002	\$31,125	\$185,821	\$27,983
Ann Arbor.....	292	578,000	265,647	843,647	113,151	113,151	20,693	307,569	307,884	69,650	238,234	60,275
Arizona Eastern.....	366	812,812	187,249	1,000,061	107,250	67,211	12,841	258,227	570,349	40,482	530,286	231,230
Atchison, Topeka & Santa Fe.....	8,204	28,569,042	4,023,087	32,592,129	7,017,251	7,004,318	817,716	11,654,993	14,982,952	1,683,744	13,299,208	1,493,818
Atlanta, Birmingham & Atlantic.....	662	986,818	301,771	1,378,589	213,574	211,136	81,530	538,994	271,513	67,725	203,788	130,911
Atlantic & St. Lawrence.....	167	418,040	159,973	578,013	126,114	93,470	19,533	288,837	45,221	36,569	41,790	8,769
Atlantic City.....	342	363,363	149,449	512,812	128,942	64,452	16,498	525,316	19,475	45,000	332,659	26,086
Atlantic Coast Line.....	4,611	9,087,527	3,952,302	13,039,829	2,015,676	2,279,346	241,343	4,944,912	3,611,869	625,000	2,986,869	439,683
Baltimore & Ohio—System.....	4,453	34,509,474	4,146,241	38,655,715	6,213,399	7,623,964	186,982	14,960,489	353,484	1,147,250	12,199,015	817,725
Bangor & Aroostook.....	631	934,819	333,778	1,268,597	247,458	151,499	18,871	397,155	435,493	52,500	402,993	71,515
Bassett & Lake Erie.....	204	4,343,743	184,416	4,528,159	417,204	666,316	48,029	1,000,926	2,403,320	51,000	2,352,320	114,218
Boston & Maine.....	2,244	12,366,671	7,804,056	20,170,727	2,647,103	3,078,747	185,383	9,317,674	80,695	883,733	5,236,460	739,358
Buffalo & Susquehanna R. R.....	265	691,713	45,213	736,926	110,995	110,995	6,168	21,862	208,298	11,000	197,298	59,148
Buffalo & Susquehanna Rv.....	91	217,171	54,055	271,226	54,890	137,144	2,443	110,486	136	7,500	41,759	17,724
Buffalo, Rochester & Pittsburgh.....	574	4,115,291	525,835	4,641,126	770,332	941,359	58,976	1,473,459	1,503,107	85,000	1,417,108	153,599
Butte, Anaconda & Pacific.....	46	430,582	68,414	498,996	75,946	106,950	3,638	251,818	93,050	10,000	83,050	139
Canadian Pacific Lines in Maine.....	233	231,135	113,853	344,988	161,283	59,723	29,066	167,024	55,193	50,000	105,193	40,762
Carolina, Clinchfield & Ohio.....	238	939,012	81,763	1,020,775	103,443	103,443	33,990	174,585	63,525	40,000	53,525	145,369
Carolina, Clinchfield & Ohio Ry. of S. C.....	18	81,402	8,545	89,947	3,736	3,736	5,163	12,157	37,637	2,500	35,137	7,777
Central of Georgia.....	1,915	3,843,725	1,718,132	5,561,857	858,573	1,047,689	178,665	1,999,148	1,797,393	252,230	1,576,736	151,015
Central of New Jersey.....	669	9,416,982	2,588,858	12,005,840	1,071,770	1,708,688	161,229	3,619,138	83,817	606,236	5,385,488	705,265
Central New England.....	277	1,390,429	156,462	1,546,891	241,840	122,856	6,400	419,233	44	50,000	768,821	121,609
Charleston & Western Carolina.....	341	560,307	160,650	720,957	144,495	128,414	17,025	289,202	138,546	25,000	133,546	88,543
Chesapeake & Ohio Lines.....	2,315	11,633,145	2,679,052	14,312,197	1,860,191	3,053,766	278,086	4,480,840	5,017,169	50,775	4,524,361	35,384
Chicago & Alton.....	1,026	4,533,552	1,922,993	6,456,545	906,039	1,419,567	121,840	2,321,549	11,636	190,000	1,662,457	23,192
Chicago & Eastern Illinois.....	1,275	5,162,821	1,335,231	6,498,052	929,676	1,392,240	123,551	2,510,102	1,872,809	211,000	1,650,163	272,650
Chicago & Northwestern.....	7,970	24,366,799	9,476,519	33,843,318	4,987,729	6,940,973	672,130	13,472,493	12,498,935	18,332	11,002,267	1,471,288
Chicago, Burlington & Quincy.....	9,123	28,707,377	10,263,501	38,970,878	4,807,090	6,880,867	576,856	12,370,734	17,003,681	1,387,605	15,568,206	2,756,128
Chicago Great Western.....	1,496	4,174,603	6,088,473	10,263,076	761,944	825,541	233,109	2,268,979	1,829,282	175,542	1,653,513	184,544
Chicago, Indiana & Southern.....	359	1,615,638	142,213	1,757,851	245,071	459,321	40,152	572,105	456,632	79,000	382,163	231,119
Chicago Junction.....	12	847,092	102,318	949,410	102,318	55,771	6,125	382,174	282,444	9,057	273,387	33,304
Chicago, Milwaukee & St. Paul.....	2,081	7,806,052	1,425,792	9,231,844	807,574	993,824	240,031	2,760,770	4,633,311	375,000	4,323,456	1,530,568
Chicago, Peoria & St. Paul.....	7,511	22,447,404	7,553,772	30,001,176	4,161,996	4,303,532	577,769	11,531,419	11,695,449	1,178,413	10,573,959	4,099,500
Chicago, Rock Island & Gulf.....	255	1,622,440	162,440	1,784,880	166,250	166,250	37,667	343,082	56,923	21,500	62,407	36,339
Chicago, Rock Island & Gulf.....	477	1,075,216	296,302	1,371,518	186,097	120,956	51,631	463,316	598,380	33,556	559,764	99,961
Chicago, St. Paul, Minneapolis & Omaha.....	7,566	20,137,477	8,232,113	28,369,590	4,681,237	4,681,237	777,947	11,367,411	9,711,033	1,187,046	7,709,456	1,218,876
Chicago, Stock Yards & Omaha.....	1,744	4,955,204	705,416	5,660,620	1,162,705	933,848	141,490	2,819,354	2,533,138	351,571	2,186,143	280,765
Cincinnati Northern.....	245	103,678	103,678	207,356	105,600	105,600	13,145	250,694	174,300	26,500	147,800	50,792
Cleveland, Cincinnati, Chic. & St. Louis.....	2,011	10,126,490	3,628,105	13,754,595	1,714,174	2,533,842	351,031	5,311,000	4,785,591	495,000	4,288,449	655,784
Colorado Midland.....	338	1,453,299	146,137	1,600,436	170,138	170,138	36,300	402,850	201,619	43,600	156,309	23,442
Colorado & Southern.....	1,073	2,856,060	698,769	3,554,829	542,818	824,654	54,313	1,086,073	1,171,345	145,875	1,022,529	86,932
Cumberland Valley.....	162	1,086,613	326,152	1,412,765	266,809	168,486	22,900	448,378	534,372	28,058	507,997	93,020
Delaware & Hudson Co.—R. R. Dept.....	854	8,386,837	1,573,030	9,959,867	1,371,109	1,371,109	126,281	3,414,256	4,259,744	244,098	3,958,404	168,570
Delaware, Lackawanna & Western.....	959	13,017,671	3,638,934	17,656,605	2,302,626	2,302,626	333,058	5,191,666	7,126,882	758,340	6,650,091	929,925
Denver, Northwestern & Pacific.....	215	374,790	174,284	549,074	85,838	83,158	9,831	166,786	210,018	17,500	192,518	22,902
Detroit & Mackinac.....	411	338,807	161,394	500,201	88,812	66,651	11,292	184,328	171,509	44,053	129,476	16,479
Detroit, Toledo & Iron Mountain.....	441	633,009	76,935	709,944	167,367	80,319	13,708	39,453	169,805	30,000	139,704	32,288
Detroit, Grand Haven & Milwaukee.....	191	632,000	323,000	955,000	1,092,901	331,414	34,663	506,861	11	14,765	62,457	32,883
Detroit River Tunnel.....	2	1,075,216	296,302	1,371,518	186,097	120,956	51,631	463,316	598,380	33,556	559,764	99,961
Duluth & Iron Range.....	274	4,271,488	103,603	4,375,091	445,781	339,475	5,389	838,631	274,015	26,041	250,678	46,140
Duluth, Missabe & Northern.....	351	4,932,910	191,569	5,124,479	423,693	432,261	9,975	876,496	3,368,303	242,297	3,126,006	451,031
El Paso & Southwestern Co.....	924	2,870,209	414,843	3,285,052	343,522	455,878	63,551	881,206	1,574,977	8,808	1,433,778	426,928
Elgin, Joliet & Eastern.....	823	5,104,414	481,206	5,585,620	578,956	806,912	23,252	1,403,192	2,644,274	107,665	2,536,609	857,405
Florida East Coast.....	642	804,117	481,206	1,285,323	331,620	261,661	25,229	596,209	205,194	5,559	77,500	40,650
Fort Worth & Denver City.....	454	1,561,629	728,944	2,290,573	191,813	379,420	37,311	738,664	981,305	58,500	920,568	11,515
Galveston, Harrisburg & San Antonio.....	1,338	3,702,077	1,310,959	5,013,036	450,921	1,064,129	158,331	1,900,281	2,541,539	25,064	1,346,648	95,878
Georgia.....	307	807,140	380,592	1,187,732	167,764	247,887	58,302	652,990	110,049	14,967	95,082	339,579
Georgia, Southern & Florida.....	395	545,845	348,707	894,552	125,145	207,236	37,882	413,882	194,141	56,579	137,562	66,440
Grand Rapids & Indiana.....	578	1,372,369	910,138	2,282,507	304,542	346,677	58,494	977,176	716,943	118	600,153	31,535
Grand Trunk Western.....	347	1,870,600	1,013,304	2,883,904	356,270	570,051	101,443	1,221,182	888,971	140,386	702,675	51,911
Great Northern.....	7,712	28,359,526	6,964,504	35,324,030	5,073,323	3,870,031	490,455	9,490,574	18,895,224	1,618,332	17,007,796	1,978,112
Gulf & Ship Island.....	308	598,751	181,889	780,640	123,469	156,121	13,933	229,054	275,966	23,302	250,664	7,141
Gulf, Colorado & Santa Fe.....	1,596	4,461,920	1,400,935	5,862,855	901,393	839,902	119,821	2,062,193	2,107,050	198,580	1,908,470	656,096
Hocking Valley.....	352	2,901,117	433,597	3,334,714	693,690	693,690	70,723	2,159,842	1,417,028	193,000	1,223,828	126,460
Houston, East & West Texas.....	191	394,536	155,911	550,447	100,066	98,293	17,991	382,983	195,016	18,633	176,383	10,772
Houston & Texas Central.....	789	2,067,695	863,935	2,931,630	355,868	498,522	89,726	1,145,687	947,412	95,930	844,308	106,981

Average mileage operated during previous period—1,761,313; 2,451,313; 3,443,434; 4,628; 5,225; 5,572; 6,762; 7,242; 7,764; 10,907,4; 11,205,9; 12,755; 13,246; 14,110,7; 15,852; 16,930; 17,358; 18,263; 19,902; 21,842; 23,585; 25,387; 27,345; 29,363. — Indicates Deficits, Losses and Decreases.

Reparation Awarded.

Paducah Cooperaage Company v. Illinois Central. Opinion by the commission:

The minimum weight of 20,000 lbs. applicable to shipments of barrels in carloads from Paducah, Ky., to New Orleans, La., was found to have been unduly discriminatory to the extent that it exceeded 12,000 lbs. subject to rule 24-C of the Southern classification, which provides for a graded increase in the minimum on larger cars. (25 I. C. C., 372.)

Bar Iron Rates Reduced.

W. C. Norris v. St. Louis & San Francisco et al. Opinion by the commission:

The commission found that the rate of 40 cents per 100 lbs. on bar iron in carloads from St. Louis, Mo., to Tulsa, Okla., was unreasonable, and unduly discriminatory as compared with a rate of 34 cents per 100 lbs. on sucker rods and pull rods, minimum weight 40,000 lbs. The commission ordered that in future this rate should not exceed 31½ cents per 100 lbs., minimum weight 40,000 lbs. (25 I. C. C., 416.)

Flaxseed Rates Increased.

In re investigation and suspension of advances in rates by carriers for the transportation of flaxseed from Minneapolis, Minn., and other points to Chicago, Ill., and other destinations. Opinion by Commissioner Lane:

The tariffs under suspension advance the proportional rates on flaxseed in carloads from Minneapolis and other points to Chicago and other points. The commission found that the proposed advances are just and reasonable. The order of suspension was vacated. (25 I. C. C., 337.)

Fourth Section Applications Denied.

In re Southern Railway and Louisville & Nashville. Opinion by Chairman Prouty:

The applications to continue to disregard the fourth section from points upon the Cumberland Valley division and the Clear Fork branch of the Louisville & Nashville and from points upon the Clear Fork branch of the Southern Railway to the Buffalo-Pittsburgh territory, via Cincinnati were denied; but with reference to the circuitous routes via Norton and Knoxville no order will now be made, pending readjustment via the short-line routes. (25 I. C. C., 407.)

Anacostia, D. C., Discriminated Against.

Anacostia Citizens Association v. Baltimore & Ohio et al. Opinion by Commissioner McChord:

The denial of free store-door pick-up and delivery of certain less-than-carload traffic to the citizens of Anacostia, D. C., which is a section of southeast Washington, D. C., while such free service is extended to other sections of the city of Washington, was found to be unjustly discriminatory in so far as the Philadelphia, Baltimore & Washington is concerned, but not with respect to the Baltimore & Ohio, which maintains a freight station in Anacostia. Defendants, by arranging to place their baggage checks at the residences of passengers in certain sections of Washington to the exclusion of passengers located in Anacostia, unjustly discriminate against the latter and are ordered to remove the discrimination. (25 I. C. C., 411.)

Grape Fruit Rates Reduced.

Lindsay & Company, Ltd., v. Great Northern, et al. Opinion by the commission:

The complainant contends that the through rate of \$1.80 per 100 lbs. for the transportation of grape fruit from Jacksonville, Fla., to Helena, Mont., is unreasonable and seeks reparation. The commission found that the rate complained of was unreasonable to the extent that it exceeds \$1.62½ per 100 lbs., and prescribed that rate for the future. Reparation was awarded. (25 I. C. C., 424.)

Rates on Lumber and Crossties Reduced.

Charles R. Ball Lumber Company v. Texas & Pacific, et al. Opinion by the commission:

The complainant contends that the rate of 27½ cents per 100 lbs. for the transportation of lumber and crossties from points in Louisiana to Acme, Tex., is unreasonable and seeks

reparation. The commission found that the rates charged on these shipments were unreasonable to the extent that they exceeded 21¼ cents per 100 lbs. from all points of origin except Mansfield, La., and that the rate from the latter point was unreasonable to the extent that it exceeded 22½ cents per 100 lbs., and prescribed these rates for the future. Reparation was awarded. (25 I. C. C., 437.)

Whiskey Rates Reduced.

Julius Kessler & Company v. Louisville & Nashville. Opinion by the commission:

The commission found that the joint rate of 75 cents per 100 lbs. on whiskey in glass, any quantity, from A:herntonville, Ky., to Mobile, Ala., and New Orleans, La., was unreasonable to the extent that it exceeds the combination of rates to and from Louisville, Ky., which are 65½ cents per 100 lbs. (25 I. C. C., 397.)

Rates on Distillers' Dried Grain Reduced.

S. J. Greenbaum Company v. Chesapeake & Ohio Railway Company et al. Opinion by Commissioner Clark:

The commission found that the rates on distillers' dried grain in carloads from Midway, Ky., to Norfolk or Newport News, Va., when for export, were unduly discriminatory as compared with rates on same commodity to same destinations from Louisville, Ky., and prescribed the latter rates for the future. (25 I. C. C., 352.)

Rates on Furniture Reduced.

Southern Furniture Manufacturers' Association v. Southern Railway et al. Opinion by Commissioner Lane:

The commission found that the rates on bedroom furniture and chairs from points in Carolina territory to Pacific coast points, north Pacific coast terminals, and points taking the same rates, were unjustly discriminatory as compared with rates upon the same commodities to the same destinations from Virginia cities and points in eastern and New England territories, and those rates were prescribed for the future. The fourth-section application seeking authority to continue lower rates on furniture and chairs from Basic City, Galax, Burkeville and other points in Virginia to Pacific coast terminals and Pacific slope points, than are concurrently maintained upon the same commodities from Carolina territory to the same destinations, was denied. Reparation was not awarded. (25 I. C. C., 379.)

Demurrage Charges and Inadequate Facilities.

Benisch Brothers v. Long Island Railroad. Opinion by the commission:

The defendant has a hand derrick at its Atkins yards, East New York, for unloading heavy freight, that is not of sufficient capacity to unload all the heavy freight received there within 48 hours of arrival. Collection of demurrage and track-storage charges on heavy freight which was delayed in unloading beyond that time, under such circumstances, was found to be unreasonable. Reparation was awarded. (25 I. C. C., 439.)

Reconsignment Charges at Detroit, Mich.

The Detroit Reconsigning Case. Opinion by Commissioner Harlan:

Upon the facts shown of record, the proposed charge of \$2, for reconsigning carload shipments received at Detroit to points within the switching district, found to be unreasonable unless the consignees are advised of the arrival of the cars at Toledo on the tracks of the carriers making delivery at Detroit, so that the consignees may have an opportunity to give their reconsigning orders before the cars reach the latter point. When tariffs, carrying out these views have been filed an order will be issued permitting the proposed charge to be made under the conditions suggested. (25 I. C. C., 392.)

STATE COMMISSIONS.

New cartage tariffs of 50 cents a ton and 15 cents for packages known as "smalls" have been prescribed by the Canadian Railway Commission at the conclusion of the hearing on the application of the railways for authority to increase the rates to 60 cents and 20 cents, at Toronto, Hamilton and Montreal, and 50 cents

and 15 cents at other points. The shippers made a compromise offer of 40 cents on some classes and 45 cents on others of freight, and 15 cents for "smalls," so the decision splits the difference.

COURT NEWS.

See editorial columns for decision of the Supreme Court relative to distribution of Southern Pacific stock owned by the Union Pacific.

The Supreme Court of the United States, in an opinion by Chief Justice White, reversing the Supreme Court of Minnesota, holds the reciprocal demurrage law of that state invalid, its provisions being in conflict with those of the interstate commerce law relating to the same subject.

The Supreme Court of Vermont has declared void the law of that state regulating demurrage on freight cars, in which there is a provision allowing four days' free time for unloading. The court says that this Vermont act conflicts with the interstate commerce law.

The federal court at Louisville, Ky., has granted an injunction on the application of the Western Union Telegraph Company to prevent the Louisville & Nashville from removing the telegraph company's equipment from the road. The contract between the telegraph company and the railway expired last August, and it is said the telegraph company will now institute proceedings to condemn the right of way along the railway.

The Supreme Court of the United States, reversing the Supreme Court of Nebraska, sustains the contention of the Chicago, Burlington & Quincy that the road is not liable, under the law of Nebraska, for damages to a horse shipped from a point in Iowa to a point in Nebraska. The road's defense was based on the claim that its liability for the loss of freight in transit had been fixed by the interstate commerce law, and that the federal law was supreme.

The Supreme Court of Indiana has affirmed a decision of a lower court sustaining the law of Indiana requiring all locomotives and cars to be equipped with grab irons. The Southern Railway was fined \$100 for a violation of this law, and in defense claimed that the conviction was unconstitutional because the federal government had passed a law regulating the use of grab irons. The court holds that the state law is not a regulation of interstate commerce, but is a police measure for the protection of trainmen at work within the state; and therefore valid.

The Supreme Court of the United States, reversing the Supreme Court of Kentucky, holds that a shipment made by express from Cincinnati, Ohio, to Augusta, Ga., is subject to the federal law and not to state laws. In the case in question a bill of lading had been issued by the Adams Express Company in which there was a provision that the carrier should not be liable for more than \$50 on any shipment unless the value of the same had been disclosed by the consignor. The federal supersedes state laws and the federal law allows carriers to insert reasonable conditions of liability in bills of lading.

The Supreme Court of Colorado has rendered a decision sustaining an order of the Colorado railroad commission of November 29, 1911, on complaint of the Breckenridge Chamber of Commerce, ordering the Colorado & Southern to restore through freight and passenger service on its South Park branch narrow gage line between Denver and Leadville, by way of Breckenridge and Como, a distance of 21 miles, on which service had been abandoned on account of the expense of conducting a light traffic over Boreas Pass, 11,400 ft. high. The cessation of service on this line required freight and passengers from Breckenridge and Leadville to travel by a very round-about route over the Denver & Rio Grande instead of by the direct route. The court held that the law imposes on the Colorado & Southern the duty of furnishing adequate facilities to the public on its entire system, not a part, and that it cannot be excused from performing its full duty merely because by ceasing to operate a part of its system the net returns would be increased, so that it cannot be said that requiring the road to perform its duty to the public by furnishing an adequate service between Denver and Leadville, although a pecuniary loss is entailed, is unreasonable or deprives it of any constitutional rights.

Railway Officers.

Executive, Financial and Legal Officers.

W. E. Crane has resigned as vice-president of the Ft. Smith & Western.

F. A. Clark, auditor of the Erie at New York, has been appointed general auditor.

George W. Seevers, general counsel of the Minneapolis & St. Louis, has resigned, to engage in the general practice of law at Oskaloosa, Iowa.

G. H. Hunt has been appointed freight claim agent of the Chicago Great Western, with office at Chicago, succeeding J. H. Howard, resigned.

H. B. Helm, second vice-president and treasurer of the Louisiana Railway & Navigation Company, has been appointed first vice-president, with headquarters at Shreveport, La., succeeding C. B. Rodgers.

T. B. Koons, freight traffic manager of the Central of New Jersey, with headquarters at New York, now has the title of vice-president and freight traffic manager, having been elected vice-president on January 1.

J. H. Howard, freight claim agent of the Chicago Great Western, has been appointed freight claim agent of the Chicago & Alton, with headquarters at Chicago, succeeding S. R. Murphy, acting freight claim agent.

E. W. Huben, assistant superintendent of the Orange & Northwestern, with office at DeQuincy, La., has been appointed auditor and general freight and passenger agent, with headquarters at Orange, Tex., succeeding E. H. Golden, resigned.

At a meeting of the board of directors of the Grand Rapids & Indiana, held on December 23, Edward B. Taylor was elected vice-president, in charge of the treasury and accounting departments, with office at Pittsburgh, Pa., and T. H. B. McKnight was elected treasurer, both with headquarters at Pittsburgh, Pa., succeeding W. R. Shelby, retired. H. F. Schieman was appointed assistant treasurer, with office at Grand Rapids, Mich. Effective January 1.

C. E. Hildum, auditor of disbursements of the Erie and the New York, Susquehanna & Western, at New York, has been appointed auditor of freight accounts, succeeding C. D. Ward, transferred, and A. P. Disbrow, chief clerk in the office of the auditor of disbursements, succeeds Mr. Hildum.



W. L. Seddon.

William Little Seddon, whose appointment as assistant to president of the Seaboard Air Line, with headquarters at Norfolk, Va., has been announced in these columns, was born on October 14, 1862, in Stafford county, Va., and was educated at the University of Missouri. He began railway work in 1898 in the engineering department of the Seaboard Air Line, and the following year he was appointed resident engineer. In 1900 he became assistant engineer of the Seaboard Air Line, remaining in that position until 1905, when he was appointed chief engineer, and on January 1, 1913, was promoted to assistant to president of the same road, as above noted.

Albert McElevy, assistant comptroller of the Pennsylvania Lines West of Pittsburgh, with headquarters at Pittsburgh, Pa., has been retired under the regulations of the pension system,

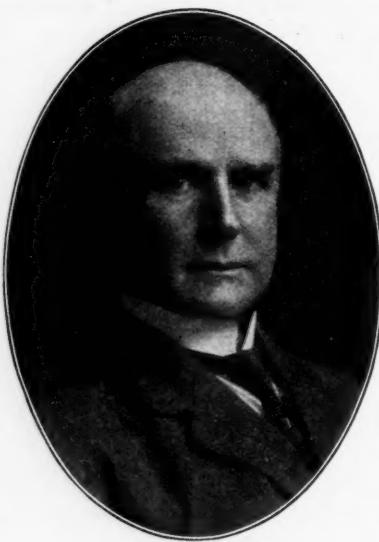
and J. H. Walker has been appointed general accountant, with office at Pittsburgh, succeeding John Hurst, promoted.

W. S. Cooke, auditor of the Mobile & Ohio and the Southern Railway in Mississippi, with office at Mobile, Ala., has been appointed assistant to comptroller of both companies. W. W. Middleton has been appointed auditor in charge of freight, passenger and station accounts, and J. H. Patterson has been appointed freight claim agent.

H. B. Chamberlain, vice-president of the Tennessee Central, with office at Nashville, Tenn., and W. K. McAlister, have been appointed receivers of the Tennessee Central. S. W. Fordyce, Jr., vice-president, at St. Louis, Mo., has been appointed general counsel, and Walter Stokes has been appointed general attorney for the receivers. (See Operating Officers.)

H. R. Payne, vice-president of the Union Tank Line Company, having retired, William M. Hutchison, secretary and treasurer, with headquarters at New York, has been elected vice-president, succeeding Mr. Payne. Mr. Hutchison retains the office of treasurer. E. F. Cook has been elected secretary, succeeding Mr. Hutchison, and E. L. Gridley has been appointed assistant treasurer, all with offices at New York.

Moorhead Cowell Kennedy, whose election as president of the Cumberland Valley, succeeding James McCrea, has been announced in these columns, was born on March 10, 1862, at Chambersburg, Pa. In 1880 he graduated from the scientific department of Phillips Academy, Andover, Mass., and in 1884 from the John C. Green School of Science of Princeton University, with the degree of civil engineer. From 1887 to 1889 he was in the banking business in Kansas, and in June, 1889, entered the service of the Cumberland Valley as assistant to the president. Three years later he was elected vice-president of the same road, and on January 1, 1903, was given entire charge of its operation, and in addition to his duties as vice-president was made general superintendent, which position he held at the time of his recent election as president of the same road.



M. C. Kennedy.

Operating Officers.

Charles W. Karcher has been appointed car accountant of the Boston & Albany, with office at Springfield, Mass.

William J. Kleck has been appointed assistant superintendent of transportation of the Texas & Pacific, with headquarters at Dallas, Tex.

R. J. Lockett has been appointed superintendent of the Ft. Worth Belt Railway, with office at Ft. Worth, Tex., succeeding W. S. Woodward, resigned.

L. A. Boyd has been appointed superintendent of the Raleigh, Charlotte & Southern, with headquarters at Biscoe, N. C., succeeding Frank Page, resigned.

W. F. Hayes has been appointed superintendent of time service of the Missouri, Kansas & Texas System, with headquarters at Dallas, Tex., effective January 1.

D. B. Carson has been appointed assistant general manager of the Nashville, Chattanooga & St. Louis, and will perform such duties as are assigned to him.

Hermann Hall, division engineer of the Louisiana Southern, has been appointed general superintendent, with office at New Orleans, La., succeeding W. H. DeFrance, resigned.

A. B. Newell, president of the Tennessee Central, with headquarters at Nashville, Tenn., has been appointed general manager for the receivers. (See Executive Financial & Legal Officers.)

H. S. Smith, assistant trainmaster of the Baltimore & Ohio Southwestern, at Seymour, Ind., has been appointed trainmaster, with headquarters at Seymour, succeeding C. A. Plumly, transferred.

A. M. Schoyer, general superintendent of the Northwest system of the Pennsylvania Lines West of Pittsburgh, has been appointed general manager of the Vandalia, with office at St. Louis, Mo.

M. J. Kennelly, formerly division superintendent of the Chicago, Rock Island & Pacific, has been appointed general manager of the Kansas City, Mexico & Orient, succeeding Edward Dickinson, of Kansas City.

Grant Hall, assistant general manager of the western lines of the Canadian Pacific, at Winnipeg, Man., has been appointed general manager of the western lines, in charge of maintenance and operation, with office at Winnipeg.

L. W. Karnes, trainmaster of the Wabash at Springfield, Ill., has been transferred to Decatur, Ill., as trainmaster in place of E. A. Sollitt, who has been appointed assistant superintendent of the Detroit division, with office at Detroit, Mich.

L. J. Ferritor, formerly superintendent of the Northern and Southern divisions of the Chicago & Alton, has been appointed superintendent of the Scranton division of the Delaware, Lackawanna & Western, with headquarters at Scranton, Pa.

J. M. Doughty has been appointed assistant division superintendent of the Galveston, Harrisburg & San Antonio at Victoria, Tex., in place of J. F. Hough. J. H. Walsh has been appointed assistant division superintendent at San Antonio, Tex.

E. C. Sicardi has been appointed superintendent of car service of the Union Tank Line Company, with headquarters at New York, and hereafter all correspondence relating to the movement and operation of Union Tank Line cars should be sent to him.

E. F. Kearney, superintendent of transportation of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, has been appointed general superintendent of transportation, with office at St. Louis, Mo., and his former position has been abolished.

H. S. Badgett, trainmaster of the Orange & Northwestern at DeQuincy, La., has been appointed assistant superintendent, with headquarters at DeQuincy, succeeding E. W. Huben, promoted. Steel Campbell has been appointed trainmaster at Anchorage, La.

F. D. Batchellor, division engineer maintenance of way of the Baltimore & Ohio Southwestern, at Seymour, Ind., has been appointed to the position, recently created, of an additional assistant to general superintendent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton.

L. M. Jones has been appointed assistant to general manager of the Norfolk Southern, in charge of purchases, fuel and statistics, with office at Norfolk, Va., and C. W. Akers has been appointed superintendent of the Southern division, with headquarters at New Bern, N. C., succeeding Virgil Walker, resigned.

J. W. Eber, general superintendent of the Toronto, Hamilton & Buffalo, at Hamilton, Ont., has been promoted to general manager, with office at Hamilton, and his former position has been abolished. A portrait of Mr. Eber and a sketch of his railway career were published in the *Railway Age Gazette* of July 5, 1912, page 34.

J. J. McCullough, inspector of terminals of the Northern Pacific at St. Paul, Minn., has been appointed superintendent of the Puget Sound division, which has just been created and extends from Keith, just north of Seattle, to the yard limits of South Tacoma, including the terminals at Tacoma and Seattle. Mr. McCullough will have offices at Tacoma and Seattle, Wash.

William O'Herin, heretofore superintendent of machinery and equipment of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., has been appointed assistant to the general manager of the Missouri, Kansas & Texas Railway System, the Beaumont & Great Northern, the Texas Central and the Wichita Falls Lines, with headquarters at Dallas, Tex.; effective January 1.

Frank E. Clarity has been appointed superintendent of transportation of the Denver & Rio Grande, with headquarters at

Denver, Colo., and will have charge of all matters pertaining to the movement of traffic, and the distribution and movement of equipment that have heretofore been handled by the assistant general manager and the car accountant. B. M. Loser, chief despatcher, at Glenwood Springs, has been appointed assistant superintendent of the Third division, succeeding E. E. Gray, transferred.

W. A. Whitney, superintendent of the Western division of the Southern Pacific, at Oakland Pier, Cal., has been appointed superintendent of the Sacramento division, with office at Sacramento, succeeding H. W. Sheridan, resigned to accept service with another company. J. D. Brennan, superintendent of the Stockton division, at Stockton, succeeds Mr. Whitney. C. H. Ketcham, assistant superintendent of the Western division, at Oakland Pier, succeeds Mr. Brennan and B. A. Campbell succeeds Mr. Ketcham.

W. Franklin Eckert, whose appointment as superintendent of the Wilmington & Columbia division of the Philadelphia & Reading, with headquarters at Reading, Pa., has been announced in these columns, was born on October 26, 1861, at Locust Dale, Pa. He began railway work on January 1, 1881, as a telegraph operator on the Philadelphia & Reading, and in May, 1886, was made train despatcher. In September, 1900, he was appointed assistant trainmaster and later in the same month was made chief train despatcher of the New York division, and now becomes superintendent of the same road, as above noted.

Charles H. Ewing, whose appointment as general superintendent of the Philadelphia & Reading, with headquarters at Reading, Pa., has been announced in these columns, was born on

May 28, 1866, in Chester county, Pa., and was educated in the high schools. He began railway work on August 1, 1883, in the engineering department of the Philadelphia & Reading as a rodman, and was later transitman and then assistant engineer. From 1889 to 1892 he was assistant supervisor and supervisor of track, and then for two years was engineer of the New England division. He was appointed chief engineer of the Central New England in 1894, and left that position in 1902 to become division engineer of the Philadelphia & Reading. He was appointed engineer main-



C. H. Ewing.

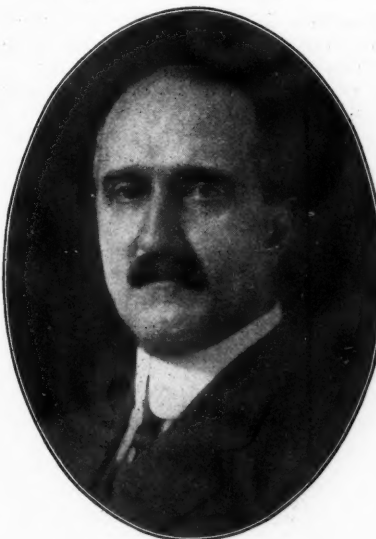
tenance of way of the same road in 1905, and on October 17, 1910, was made superintendent of the Atlantic City Railroad, and now becomes general superintendent of the Philadelphia & Reading, as above noted.

Robert S. Parsons, who has been appointed assistant general manager of the Erie lines east of Buffalo and Salamanca, with headquarters at New York, graduated from Rutgers' College in 1895 with the degree of civil engineer. The same year he entered the engineering department of the Erie, and until 1901 held various positions in the engineering department. From 1901 to 1905 he was engineer maintenance of way, and in 1905 was appointed superintendent. He was subsequently transferred in the same capacity to various divisions, and at the time of his recent appointment was superintendent of the New York division of the same road at Jersey City, N. J.

W. B. Wood, superintendent of the Cleveland & Pittsburgh division of the Pennsylvania Lines West of Pittsburgh, Northwest System, has been appointed superintendent of the Eastern division, Northwest system, with headquarters at Allegheny, Pa., to succeed E. T. Whiter, promoted. I. W. Geer, superintendent of the Logansport division, Southwest system, with office at Logansport, Ind., succeeds Mr. Wood, with headquarters at Cleveland, Ohio. H. E. Newcomet, division engineer

of the Cleveland & Pittsburgh division, Northwest system, has been appointed superintendent of the Louisville division, Southwest system, with headquarters at Louisville, Ky., in place of F. J. Kron, who succeeds I. W. Geer.

Harry Ward McMaster, who has been appointed general manager of the Wheeling & Lake Erie, as already announced in these columns, was born September 29, 1860. He received



H. W. McMaster.

a common school education and entered railway service in 1873 as an operator and agent for the Detroit, Lansing & Northern. From 1878 to 1882 he was operator and train despatcher of the Grand Rapids & Indiana and the following two years was train despatcher of the Chicago & North Western. He then went to the Union Pacific, where he remained five years as chief train despatcher and trainmaster, leaving in 1889 to become chief train despatcher and trainmaster of the Northern Pacific. In May, 1900, he was appointed superintendent of the Toledo division

of the Wheeling & Lake Erie, and from November, 1904, to September, 1905, was superintendent and superintendent of telegraph of that road and the Wabash Pittsburg Terminal at Canton, Ohio. He was then promoted to the general superintendency of those roads and the West Side Belt, which position he held until he was appointed receiver of the Wabash Pittsburg Terminal on May 29, 1908, and one month later receiver also of the West Side Belt. He now resigns as receiver of these to become general manager of the Wheeling & Lake Erie, as stated above.

Joseph A. Gordon, whose appointment as general superintendent of the Pere Marquette, with headquarters at Detroit, Mich., has been announced in these columns, was born November 10, 1865, at Cincinnati, Ohio. He was graduated from St. Xavier College, Cincinnati, in 1884, and began railway work soon after with the Cincinnati, Hamilton & Dayton, where he remained until 1887 as telegraph operator and clerk in the local freight office at Cincinnati. During 1888 he traveled in Europe, returning to railway service the following year as clerk in the auditing department and station agent of the Cincinnati, Hamilton & Dayton at Cincinnati. From 1890 to November, 1893, he was chief clerk to the superintendent of the Cincinnati division; then was promoted to trainmaster of that division, and in March, 1896, was made superintendent of the Wellston division. In May, 1902, he was transferred to the superintendency of the Southern division, and on November 4, 1904, was appointed general superintendent of that road. From September, 1909, to April 10, 1910, Mr. Gordon traveled on the Pacific Coast and in Mexico, and then accepted the position of superintendent of the Kansas City division of the Chicago Great Western. He was transferred to



J. A. Gordon.

the Chicago division as superintendent February 15, 1911, resigning December 15, 1912, to become general superintendent of the Pere Marquette.

Anthony Douglas MacTier, whose appointment as general manager of the Eastern lines of the Canadian Pacific, with headquarters at Montreal, Que., has been announced in these columns, was born on December 27, 1867, at Blairgowrie House, Scotland, and was educated at Sedbergh school, Yorkshire, England. He began railway work in May, 1887, in the general baggage agent's office of the Canadian Pacific, and was later in the general superintendent's department. He was then in the department of the superintendent of sleeping, dining and parlor car stores, and later in the car service department. In April, 1896, he was appointed general baggage agent, and in November, 1899, became general fuel agent. He was appointed assistant to the vice-president of the Canadian Pacific in June 1907, and now becomes general manager of the Eastern lines of the same road.

Albert J. Stone, general superintendent of the Erie lines east of Buffalo, N. Y., and Salamanca, with office at New York, has been appointed general manager, with office at New York. Robert S. Parsons, superintendent of the New York division, at Jersey City, N. J., has been appointed assistant general manager, lines east of Buffalo and Salamanca. Henry O. Dunkle, general superintendent of the lines west of Buffalo and Salamanca, at Cleveland, Ohio, has been appointed general manager of the lines west. Edgar W. Batchelder, assistant general superintendent of the lines west at Marion, Ohio, has been appointed assistant general manager, lines west, and the offices of general superintendents are abolished. John B. Dickson, general agent at Chicago, has been appointed superintendent of the New York division and branches, and of the New Jersey & New York, with office at Jersey City; A. C. Elston, superintendent of the Buffalo division at Buffalo, succeeds Mr. Dickson, and Franklin G. Robbins succeeds Mr. Elston.

Perry Seymour Sampson, who was appointed superintendent of the St. Louis division and St. Louis terminals of the Chicago & Eastern Illinois, with headquarters at St. Louis, Mo., effective November 15, 1912, was born at Brazil, Ind., June 12, 1865. He was educated in the public schools of Brazil, Ind., and Sedalia, Mo., and began railway work in June, 1882, as operator and clerk in the maintenance of way department of the Pittsburgh, Cincinnati, Chicago & St. Louis at Richmond, Ind. In May, 1884, he went to the Grand Rapids & Indiana as operator and bill clerk and one year later entered the service of the Baltimore & Ohio in a similar capacity, resigning in 1886 to engage in other business. Mr. Sampson again took up railway work in December, 1889, with the Chicago & Eastern Illinois; eight months later he was promoted to conductor; in January, 1894, was made train despatcher, and in September of the following year was advanced to chief despatcher of the Indiana division. He was transferred to the Illinois and St. Louis divisions as chief despatcher in April, 1903, and in March, 1905, became train-master of construction of the Illinois division. In November of that year he returned to the Indiana division as chief despatcher and in April, 1908, was promoted to superintendent and track supervisor of that division, with headquarters at Brazil. He was transferred to the superintendency of the Illinois division on July 1, 1911, which position he held at the time of his recent appointment, as noted above.



P. S. Sampson.

Traffic Officers.

B. S. Barnes has been appointed foreign freight agent of the Erie, with office at New York.

Harry J. Bills, traveling passenger agent of the Lehigh Valley at Chicago, has been transferred to Kansas City, Mo.

W. H. Tayloe has been appointed traffic manager of the Chesapeake Steamship Company, with office at Baltimore, Md.

E. A. Senneff has been appointed agent of the Erie Despatch, with headquarters at Spokane, Wash., succeeding H. L. Tibbetts.

E. L. Jones has been appointed general agent of the traffic department of the Minneapolis & St. Louis, with office at San Francisco, Cal.

Hugh C. Couch has been appointed soliciting freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Dallas, Tex.

Charles Scott has been appointed general freight and passenger agent of the Lexington & Eastern, with headquarters at Lexington, Ky.

G. H. Geagan, general freight and passenger agent of the Tremont & Gulf, at Winnfield, La., has resigned, and his former position has been abolished.

B. J. Libbe, special agent of the traffic department of the Chicago & Alton, has been appointed general agent of the freight department, with office at Chicago.

George F. Clough has been appointed commercial agent of the Lake Shore & Michigan Southern, with office at Cleveland, Ohio, succeeding George T. Rowe, deceased.

T. J. Cumming, traveling freight agent of the Georgia Southern & Florida, at Cordele, Ga., has been appointed commercial agent, with office at Valdosta, Ga., succeeding B. P. Miller, resigned.

W. E. Van Dreser has been appointed Northwestern agent of the Traders Despatch, with headquarters at Minneapolis, Minn., in place of George B. Norris, resigned to engage in other business.

U. G. Soule has been appointed commercial agent of the Southern Railway, with office at Denver, Colo., succeeding W. H. Tayloe, general agent, resigned to accept service with another company.

G. F. Snow, traffic agent of the Bangor & Aroostook at Bangor, Maine, has been appointed general agent of the freight and passenger departments, with headquarters at Presque Isle, Maine, and his former position has been abolished.

T. D. Hobart, coal and coke freight agent of the Norfolk & Western at Roanoke, Va., has been appointed general coal freight agent, with office at Roanoke. He will have charge of all matters pertaining to coal and coke rates.

Elbert Blair, commercial agent of the Missouri, Kansas & Texas of Texas, at Denison, Tex., has been appointed general freight and passenger agent of the Texas Central, with headquarters at Waco, Tex., in place of W. E. Seifer.

W. H. Bissland, assistant general passenger agent of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, at St. Louis, Mo., has been appointed general baggage agent, with office at St. Louis, succeeding Benton Quick, deceased.

F. S. Fisher, commercial agent of the Missouri, Kansas & Texas of Texas, at Waco, Tex., has been transferred to Denison, Tex., in a similar capacity to succeed Elbert Blair. L. T. Fowler, chief clerk in the office of commercial agent at Ft. Worth, Tex., succeeds Mr. Fisher.

H. R. Lewis, division freight agent of the Baltimore & Ohio at Baltimore, Md., has been appointed general freight agent, with headquarters at Baltimore, succeeding T. W. Galleher, deceased, and W. R. Askew has been appointed division freight agent, with headquarters at Baltimore, succeeding Mr. Lewis.

E. A. Oliver, live stock and freight agent of the Pittsburgh, Cincinnati, Chicago & St. Louis at Union Stock Yards, Chicago,

has been relieved of the duties of freight agent and hereafter will be in direct charge of the solicitation of live stock traffic at Chicago and territory tributary thereto, under the immediate direction of the general western freight agent.

N. R. Williams, traveling passenger agent of the Chicago, Peoria & St. Louis, has been appointed general agent of the freight department, with headquarters at Minneapolis, Minn., succeeding O. P. Bennett, resigned. S. B. Wade, traveling freight agent, with office at St. Louis, Mo., has been appointed commercial agent, with headquarters at Little Rock, Ark.

W. D. Skinner, assistant traffic manager of the Oregon-Washington Railroad & Navigation Company, has been appointed traffic manager of the Spokane, Portland & Seattle, the Oregon Trunk, the Oregon Electric and the United Railways, with headquarters at Portland, Ore., succeeding W. E. Coman, resigned, whose title was general freight and passenger agent, and which office is now abolished.

J. G. Carlisle, division freight agent of the Central of Georgia at Macon, Ga., has been appointed assistant general freight agent, with headquarters at Savannah, succeeding J. B. Parker, resigned. T. L. Collings, commercial agent at Atlanta, succeeds Mr. Carlisle. F. E. Ellis, contracting freight agent at Atlanta, succeeds Mr. Collings. H. R. McLean, commercial agent at Athens, succeeds Mr. Ellis, and B. R. Bloodworth has been appointed acting commercial agent, at Athens.

L. H. McArthur, traveling passenger agent of the Cincinnati Hamilton & Dayton, with headquarters at Dayton, O., has been appointed city passenger agent of the Baltimore & Ohio Southwestern at Kansas City, Mo. George F. Scheer has been appointed traveling passenger agent, with office at St. Louis, Mo. H. C. Stevenson, division passenger agent at Chillicothe, O., has been appointed traveling passenger agent, with headquarters at Denver, Colo., in place of S. M. Shattuc, deceased.

E. E. Carter, division freight agent of the St. Louis & San Francisco at Wichita, Kan., has been appointed general agent at that point; W. B. Craig, local agent at Tulsa, Okla., has been appointed general agent at that place; R. C. Mills has been appointed general agent, with headquarters at Oklahoma City, Okla.; S. B. Haas, division freight agent at Ft. Smith, Ark., has been made general agent, with office in that city; M. J. Conley, local agent at Joplin, Mo., has been appointed general agent at Joplin; and Warren Baker, division freight agent at Cape Girardeau, Mo., has been made general agent at that point. The above changes are in accordance with a new plan of the Frisco to have general agents in charge of both traffic and operating matters at points where formerly only traffic representatives have been located.

S. S. Bridgers, who has been appointed assistant general freight agent of the Norfolk & Western, with office at Roanoke, Va., was born in 1874 at Petersburg, Va., and was educated in the public schools and at the Virginia Polytechnic Institute. He began railway work in 1891 on the Chesapeake & Ohio and the following year went to the Norfolk & Western. He was in the general offices at Roanoke until 1900 when he was made commercial agent at Indianapolis, Ind., and three years later was transferred in the same capacity to Pittsburgh, Pa. For one year from 1908 he was division freight agent at Roanoke, Va., of the same road and was then appointed assistant general freight agent at Columbus, Ohio, which position he held at the time of his recent appointment as assistant general freight agent at Roanoke, Va., of the Norfolk & Western; also as manager of the Great Southern Despatch, the Southern States Despatch and the Shenandoah Despatch Fast Freight Lines.

Engineering and Rolling Stock Officers.

Lloyd B. Jones has been appointed assistant engineer of motive power of the Pennsylvania lines west of Pittsburgh, with office at Toledo, Ohio.

Fred Mertsheimer, superintendent of motive power and car department of the Kansas City, Mexico & Orient, with office at Wichita, Kan., has resigned.

J. B. Randall, assistant master mechanic of the Louisville, Henderson & St. Louis, at Cloverport, Ky., has been appointed master mechanic, and his former position has been abolished.

H. A. Cassil has been appointed division engineer of the Baltimore & Ohio Southwestern, with headquarters at Seymour, Ind., succeeding F. D. Batchellor, promoted. (See Operating Officers.)

R. J. Middleton, assistant engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed engineer of track elevation, in charge of the Bloomingdale Road elevation in that city, effective January 1.

H. F. Passel, division engineer of the Cincinnati, Hamilton & Dayton, at Dayton, Ohio, has been appointed division engineer, with headquarters at Indianapolis, Ind., succeeding T. B. Conlyn, resigned, and H. G. Snyder succeeds Mr. Passel.

Seely Dunn, who formerly was manager of the Southern Car Service Association, and later engaged in the railway equipment business at New Orleans, La., has been appointed division engineer of the United Fruit Company, with headquarters at New Orleans.

John McMullen, shop superintendent of the Erie at Buffalo, N. Y., has been appointed mechanical superintendent of the Erie and subsidiary companies in charge of the car department, with headquarters at Meadville, Pa., succeeding E. A. Wescott, assigned to other duties. Adam Trautman, shop superintendent at the Kent, Ohio, car shop of the Erie, has been appointed shop superintendent of the Buffalo, N. Y., car shop, and William Miller has been appointed shop superintendent of the Kent car shop, succeeding Mr. Trautman.

G. R. Barry, division engineer of the Pennsylvania Lines West of Pittsburgh, Central system, at Zanesville, Ohio, has been appointed division engineer of the Logansport division, Southwest system, with headquarters at Logansport, Ind., to succeed E. B. Taylor, Jr., transferred. S. W. Hodgins, division engineer, Southwest system, at Cambridge Ohio, has been appointed division engineer of the Richmond division, Southwest system, with office at Richmond, Ind., to succeed F. N. Crowell, who has been appointed division engineer of the Cincinnati division, Southwest system, with office at Cincinnati, Ohio, in place of E. F. McCrea, transferred. R. C. Harris has been appointed supervising engineer, Southwest system, attached to the staff of the general superintendent, with office at Columbus, Ohio. Effective January 1.

Purchasing Officers.

J. R. Mueller has been appointed purchasing agent of the Hocking Valley, with office at Columbus, O., to succeed C. B. Duffy, deceased.

S. E. Keillor, formerly with the Duluth, Rainy Lake & Winnipeg, has been appointed storekeeper, with office at Duluth, Minn., of the Duluth, Winnipeg & Pacific, which has leased the D. R. L. & W.

L. B. Wood has been appointed general storekeeper of the Sunset Central Lines of the Southern Pacific, with headquarters at Houston, Tex., succeeding R. L. Pries, who at his own request, on account of ill health, has been made storekeeper at Houston.

Special Officers.

Frank Anderson, industrial commissioner of the St. Louis & San Francisco, has been appointed to the newly created position of director of development, with headquarters at St. Louis, and the former office is abolished. The industrial, agricultural and immigration work, heretofore carried on through several departments, will hereafter be under the direct supervision of the director of development.

OBITUARY.

P. Sid Jones, district passenger agent of the Louisville & Nashville, at Birmingham, Ala., died on January 2.

Robert Lee, district passenger agent of the Oregon-Washington Railroad & Navigation Company, with headquarters at Tacoma, Wash., died in that city on December 29.

W. W. Wentz, formerly general superintendent of the Chicago, Rock Island & Pacific at Little Rock, Ark., and who retired from railway service in 1904, died on December 28, at Chicago, aged 56 years.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE CHESTNUT RIDGE is in the market for 1 locomotive.

THE CENTRAL OF BRAZIL is making inquiries for from 10 to 12 locomotives.

THE STEWART IRON COMPANY, Sharon, Pa., is making inquiries for 1 locomotive.

THE RUTLAND has ordered 7 locomotives from the American Locomotive Company.

THE DENVER & SALT LAKE has ordered 2 locomotives from the American Locomotive Company.

THE SOLVAY PROCESS COMPANY has ordered 1 locomotive from the American Locomotive Company.

THE HARRIMAN LINES' order will comprise 50 locomotives from the American Locomotive Company and 208 locomotives from the Baldwin Locomotive Works.

CAR BUILDING.

THE NORFOLK & WESTERN is in the market for 1,250 freight cars.

THE CHICAGO, MILWAUKEE & ST. PAUL is figuring on over 6,000 freight cars.

THE FT. DODGE, DES MOINES & SOUTHERN is in the market for 200 box cars.

THE AMERICAN REFRIGERATOR TRANSIT has ordered 1,000 refrigerator cars from the American Car & Foundry Company.

THE NEW YORK CENTRAL LINES have ordered 1,000 box cars from the American Car & Foundry Company, for the Cleveland, Cincinnati, Chicago & St. Louis.

IRON AND STEEL.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has ordered 4,000 tons of rails from the United States Steel Corporation.

THE DULUTH, MISSABE & NORTHERN has ordered 22,000 tons of steel from the American Bridge Company for its proposed ore dock at Duluth.

GENERAL CONDITIONS IN STEEL.—Although the volume of orders placed since the first of the year has been characteristic of the holiday period, they have been heavier than expected. It is believed that the Steel Corporation booked about 1,000,000 tons of new business during December, and that the unfilled tonnage for that month will show an increase of about 75,000 tons.

SIGNALING.

The New York, Chicago & St. Louis has ordered from the Western Electric Company apparatus for telephone train despatching, between Fort Wayne and Stony Island, 145 miles, and between Fort Wayne and Bellevue, Ohio, 125 miles.

The Missouri, Kansas & Texas plans during the present year to install automatic block signals on about 100 miles of its lines, as follows: Atoka, Okla., to the Red river, three miles, double track; Red river to Denison, Tex., 4.5 miles, single track; Hillsboro to Granger, Tex., 94 miles. Two mechanical interlocking plants are to be installed; one of 23 functions at Elgin, Tex., crossing of the Houston & Texas Central, and one of 12 functions at West Point, Tex., crossing of the San Antonio & Aransas Pass. An electro-pneumatic interlocking of 29 functions is to be installed at Denison, crossing of the Houston & Texas Central.

GREAT EASTERN RAILWAY, ENGLAND.—New lines and sidings, additional dock lines and a river wall are contemplated at Ipswich by the Great Eastern Railway. Additional capital powers for these and other purposes will also be asked.

Supply Trade News.

Stewart B. McEldowney, superintendent of the Chicago Steel Car Company's plant at Harvey, Ill., died on January 1, at Chicago.

S. W. Midgley, western representative of the Curtain Supply Company, Chicago, has been made western sales manager of that company.

The Hobart-Allfree Company, Chicago, has opened a factory at Chicago where the Freeland and Smyth derailleurs, switch stands, targets, car replacers, etc., will be assembled and shipped.

The Epping-Carpenter Company, Pittsburgh, Pa., which makes pumping machinery and condensers, has opened a branch office at 728 Monadnock building, Chicago. This office will be in charge of R. E. Burke, who was formerly with the International Steam Pump Company.

J. E. Chisholm has been made a representative of the Universal Flexible Packing Company, Pittsburgh, Pa., with offices in the Old Colony building, Chicago; and George R. Argo has been made representative of the same company, with office in the Third National Bank building, Atlanta, Ga.

William B. Hall has resigned as vice-president and general manager of the Illinois Car & Manufacturing Company, to promote the interests of the Union Railway Equipment Company, of Chicago, which has taken over the patented devices invented by Herman Pries, superintendent of the Haskell & Barker Car Company. Mr. Hall was formerly superintendent of equipment of the Mather Horse & Stock Car Company for 16 years.

Samuel E. Barrett, chairman of the Barrett Manufacturing Company, with office at Chicago, who died at Baltimore on December 29, as was mentioned in the *Railway Age Gazette* of January 3, was born in Massachusetts in 1836. He served through the Civil War as an officer in the Union army, and later came to Chicago and organized the Barrett Manufacturing Company, manufacturers of roofing materials. Mr. Barrett was also a stockholder and a director of several Chicago banks. He retired from active business in 1906.

The officers of the J. G. White Engineering Corporation, New York, the incorporation of which was mentioned in the *Railway Age Gazette* of November 22, page 1012, are as follows: Chairman of the finance committee, J. G. White; president, Gano Dunn; vice-presidents, E. G. Williams, A. S. Crane and H. A. Lardner; secretary, H. S. Collette; and treasurer, R. B. Marchant. During the year ended October 1, 1912, the departments of J. G. White & Company, Inc., which have been organized into the J. G. White Engineering Corporation, were at work on contracts aggregating in cost over \$28,000,000, and on appraisals and reports upon properties aggregating over \$400,000,000. The officers of the J. G. White Management Corporation, the incorporation of which was mentioned in the *Railway Age Gazette* of November 22, page 1012, are as follows: President, J. H. Pardee; vice-presidents, F. H. Reed and S. L. Selden; secretary and treasurer, T. W. Moffat. The parent organization, J. G. White & Company, Inc., controls the new companies and will continue as an active financing and owning company.

H. F. Ball has opened an office in the Hudson-Terminal building, 30 Church street, New York, as a special consulting engineer. Mr. Ball entered the service of the Pennsylvania Railroad as an apprentice at Altoona, Pa., in 1884. Four years later he entered the drafting room at Altoona and in 1890 was appointed chief draftsman of the car department of the Lake Shore & Michigan Southern. Two years later he was placed in charge of the car shops at Cleveland, as general foreman, and in 1894 was appointed general car inspector. Five years later he was made mechanical engineer of the Lake Shore, which position he held until his promotion to the position of superintendent of motive power in February, 1902. In 1906 he left the Lake Shore to accept the vice-presidency of the American Locomotive Automobile Company; a few months later his jurisdiction was extended over the American Locomotive Company, as vice-president of engineering. This position he resigned a short time ago, as announced in our issue of November 8, 1912. Mr. Ball's

tenure of office, as vice-president of engineering of the American Locomotive Company, has been co-incidental with some of the most important improvements made in locomotive construction, as well as the great increase in power and weight which characterize the present day locomotive. It covered such radical changes in design, as a substitution of the Walschaert for the Stephenson valve gear, the use of superheated for saturated steam, and the successful development of the Mallet locomotive. Mr. Ball was president of the Central Railroad Club in 1900 and of the American Railway Master Mechanics' Association in 1905-6.

TRADE PUBLICATIONS.

LATHE CHUCKS.—The Skinner Chuck Company, New Britain, Conn., has published a new catalog and price list of its independent, universal and combination lathe chucks. Illustrations, brief description and dimension tables are included.

CHICAGO & NORTHWESTERN-UNION PACIFIC.—The department of tours of the Chicago, Union Pacific & Northwestern line has issued an especially attractive booklet describing its winter vacation tours to the Pacific Coast and the Hawaiian Islands.

ELECTRIC DRILLS.—The Chicago Pneumatic Tool Company has published bulletins E-22, E-26 and E-27, illustrating and describing heavy duty electric drills for alternating current; universal electric drills operating on direct or alternating current; and heavy duty electric drills for direct current; respectively.

REFRIGERATION-HEATING-VENTILATION.—The Moore Patent Car Company, St. Paul, Minn., has published an attractive booklet entitled *Perishable Products Transported Scientifically and Economically*, illustrating and describing in detail the construction of its cars. An interesting table is included showing the comparative tests of the Moore system vs. end ice box cars moving in the same train.

RIVETERS.—The Vulcan Engineering Sales Company, Chicago, has published an attractive catalog of Hanna pneumatic riveters, screen shakers, revolving dumping riddles, mold dryers, etc., made by the Hanna Engineering Works, Chicago. The design and construction of these riveters are described in great detail and their advantages are set forth in a most convincing manner. The entire product and sales of the Hanna company are controlled by the Vulcan Engineering Sales Company.

NEW LINES FOR URUGUAY.—A series of railways are being projected by the Uruguayan government to link up the existing roads and to supply localities not now with means for transportation. The two first railways will extend through the departments of Colonia, Soriano, Durazno, Rocha and Maldonado, with a narrow-gauge railway between Carmelo and Palmira and Dolores and La Laguna. A European syndicate with \$15,000,000 capital has offered to co-operate with the government in the construction of these railways.

RAILROAD POLICY IN WESTERN AUSTRALIA.—In the state of Western Australia new railways are designed and constructed on plans which are not submitted to the commissioner of railways who is responsible for their operation and maintenance. This lack of co-operation would not be so bad were it not for the fact that the policy has, for its guiding principle, that the paramount consideration shall be the least first cost. As a consequence these lines are built with steep grades, light rails and ties, insufficient ballast, defective drainage and the omission of the water supply, and the results are small loads, limited speeds, excessive maintenance costs, and haulage of water. Mr. Short, the commissioner, draws attention to this in his report for the year ending June 30 last, and says that 15 miles an hour is the maximum speed for such roads. Trains, consisting partly of tanks of water for the engine can only crawl up the steep grades; in descending them, or on the level, they are prevented from improving their average speed by the character of the permanent way. In the meantime the trainmen are paid excessive overtime, and there is an excessive number of men employed for maintenance, all of which unnecessary expense would be sufficient probably to cover interest many times over on the extra amount which a first-class railway would have cost in comparison with the cheap railway which exists.

Railway Construction.

ALABAMA, TENNESSEE & NORTHERN.—We are informed that this company and the Tombigbee Valley railroad built about 30 miles of new lines in Alabama during 1912, to connect up their lines in Choctaw county between the towns of Ward and Silas.

ASHLAND & WESTERN.—An officer of this company, which operates a line from Custaloga, Ohio, northwest to Ashland, 25 miles, has given a general contract to the West Virginia & Ohio Construction Company, of Ashland, Ohio, for work on an extension building under the name of the Lorain, Ashland & Southern, from Ashland north via Wellington to Lorain. Track has been laid from Lorain south to Wellington 20 miles. There remains a section of 23 miles yet to be built between Wellington and Ashland, and work on this section will be sublet. There will be about 300,000 cu. yds. of earth to be handled and 270,000 yds. of borrow, also 12,000 cu. yds. of concrete to be constructed. The maximum grade southbound will be 26 ft. to the mile, and northbound the ruling grade will be 77 ft. to the mile, and the curvature outside of the terminals will be 2 deg. The company expects to develop a traffic in coal, ore, manufactures and miscellaneous freight.

BRITISH COLUMBIA & WHITE RIVER.—The Canadian parliament has been asked for an extension of time to build from a point in British Columbia on the international boundary at Bear creek, a tributary to the Chilkat river, northwest towards the Alsek river and thence through the Shawkak valley to Lake Kluane, thence along Lake Kluane and via the Donjek valley to the White river, thence to the boundary between the Yukon territory and Alaska between the 62nd and 64th parallels. Barnard & McKeown, Montreal, are solicitors for the applicants.

BUCTOUCHE RAILWAY & TRANSPORTATION COMPANY.—See Moncton & Northumberland Strait.

CALGARY, EDMONTON & FORT McMURRAY.—Application has been made in Canada for a charter to build lines as follows: From Calgary, Alb., north via Edmonton, passing east of Lac La Biche to Fort McMurray, and following the Athabasca river to Chipewyan, thence west of Slave river and passing through or near Fort Smith to Fort Resolution on Great Slave lake; from Fort Smith southwest to Fort Vermilion, thence southerly on the west side of Peace river to Peace River Landing, and southwest to Dunvegan; from a point on the Red Deer river north of the 52nd parallel to Red Deer. Christie, Greene & Hill, Ottawa, Can., are solicitors for the applicants.

CANEY RAILWAY.—Incorporated in Kentucky with \$10,000 capital to build from a point on the Chesapeake & Ohio in Floyd county, Ky., following the middle branch of the Big Sandy river to Beaver Creek, and reaching coal fields in eastern Kentucky. The incorporators include J. Salisbury, M. Flannigan, W. T. Hite, W. W. Brown and W. P. McVay. The headquarters of the company are at Prestonburg.

CLINTON & OKLAHOMA WESTERN.—See Oklahoma Roads.

HURON LAKE SHORE.—Application is being made to the Canadian parliament for incorporation to build from Sarnia, Ont., northeast through the counties of Lambton, Huron, Bruce and Grey, to Meaford. W. B. Converse, Montreal, Que., is solicitor for the applicants.

LAKE ERIE & YOUGHIOGHENY (Electric).—Incorporated in Ohio with \$3,000,000 capital to build a line to connect Youngstown, Ohio, with Conneaut. A. W. Jones, J. H. Ruhlman, G. J. Chapman, W. H. Ruhlman and G. M. Brown, all of Youngstown, are interested.

LORAIN, ASHLAND & SOUTHERN.—See Ashland & Western.

MANITOBA-ONTARIO ROADS.—Incorporation has been asked for in Canada to build a railway from Fort William, Ont., northwest via the Lake of the Woods to Winnipeg, with branches to the international boundary between Ontario and Minnesota, and from the main line northerly to the National Transcontinental (Grand Trunk Pacific), also to operate steamships, etc. Lewis & Smellie, Ottawa, Ont., are solicitors for the applicants.

MICHIGAN CENTRAL.—An officer writes that during the year 1912 this company constructed 2.42 miles of third and fourth

main track in the state of Michigan, which will be used exclusively for freight business. On the Detroit, Delray & Dearborn branch the company built 1.7 miles of second track in Michigan, and has also constructed a double track freight line from that branch to Junction yards at Detroit, 2.46 miles, which is known as the connecting branch. On the Detroit Belt Line 1.37 miles of second track in the city of Detroit was constructed.

MONCTON & NORTHUMBERLAND STRAIT.—The Buctouche Railway & Transportation Company, which was incorporated in Canada in 1910, to build from Buctouche, N. B., north to Richibucto Harbor, and from West Point, P. E. I., east to Coleman, on the Prince Edward Island Railway; also to operate steamers and car ferries, between the two provinces, is applying to change its name as above, and for authority to extend the authorized line from Richibucto harbor to Chatham, N. B., or to Loggieville; also to build a line from Painsec, N. B., to Cape Tormentine. E. G. Evans is general manager, Moncton, N. B.

OKLAHOMA ROADS.—Work is now under way building a four-mile line from Cheyenne, Okla., to a connection with the Clinton & Oklahoma Western. Grading has been finished on about two miles, and it is expected that the line will be open for traffic in February. The chamber of commerce of Cheyenne is back of the project.

SAN PEDRO, LOS ANGELES & SALT LAKE.—An officer writes, regarding the reports that this company will build a low grade line via the Cajon Pass, Cal., that location work is now under way between Riverside and Daggett over the San Bernardino mountains via Cajon Pass. The distance between these two places is 100 miles. It has not yet been determined whether construction work will be started in the near future.

SOUTHERN TRACTION.—An Officer writes that the general contract for constructing and equipping these lines has been given to the Southern Engineering & Construction Company, Dallas, Tex. Work is now under way from Dallas south via Ferris to Corsicana, 55.5 miles, also from Dallas via Lancaster, Waxahachie, Italy, Milford and Hillsboro to Waco, on 97.5 miles. About 30 miles have been finished and are now in operation. (October 25, p. 815.)

SPRINGFIELD & CENTRAL ILLINOIS TRACTION.—According to press reports this company will begin construction work about April. The company was organized in 1910, to build from Springfield, Ill., south via Pawnee, Morrisonville, Hillsboro, Coffeen, Greenville, Carlisle and Centralia; with another line from Greenville west via Alhambra, Edwardsville and Grant City to St. Louis, Mo., and a third line from Coffeen, Ill., south-east via Vandalia, Kimmunity, Louisville and Olney to Mount Carmel. Isaac A. Smith, president and general manager, Security building, St. Louis, Mo. Charles Olson, Beavercreek, Ill., is said to be interested. (February 16, p. 321.)

TOMBIGBEE VALLEY.—See Alabama, Tennessee & Northern.

RAILWAY STRUCTURES.

GALVESTON, TEX.—The Gulf, Colorado & Santa Fe has awarded a contract for the construction of the new union station and general office building to the American Construction Company of Houston. The building will be of steel and concrete construction, six stories in height, and will cost approximately \$500,000. It will include a waiting room 62 ft. x 100 ft. The building will have a frontage of 100 ft. and a depth of 125 ft.

HOWELL, IND.—It is reported that the Louisville & Nashville will spend about \$200,000 in enlarging its shops at Howell.

MECHANICSVILLE, N. Y.—The Boston & Maine has started work on a new eastbound classification yard and engine facilities consisting of engine house, machine shop, coaling plant, etc. The grading is completed and work on the foundations is under way.

PARSONS, KAN.—The Missouri, Kansas & Texas has awarded a contract to the Gray-Wimmer Construction Company of St. Louis, for the rebuilding of its passenger station.

ROODHOUSE, ILL.—The coaling station of the Chicago & Alton at Roodhouse was destroyed by fire on the night of December 31.

Railway Financial News.

BALTIMORE & OHIO.—A mortgage has been filed in Pennsylvania on the property of the B. & O. in that state to secure an issue of \$40,000,000 bonds.

CHICAGO, MILWAUKEE & ST. PAUL.—The *Commercial & Financial Chronicle*, in reply to an inquiry as to the exact legal procedure by which the C. M. & St. P. has taken over the Chicago, Milwaukee & Puget Sound, has received the following from General Counsel Burton Hanson:

"By purchase, the St. Paul company has acquired the fee ownership of the railway lines and property of the Chicago, Milwaukee & Puget Sound Company. The entire capital stock of that company heretofore held by the St. Paul company will continue to be held by the latter as a muniment of title and for the purpose of continuing the corporate existence of the Puget Sound company for such length of time as may be thought advisable, but the lines of railway formerly owned and operated by that company, by the conveyance to the St. Paul company, will be owned and operated by the latter company. As part of the consideration of the purchase, the St. Paul company assumes and agrees to punctually pay, when due and payable, all bonds issued under the first mortgage of the Puget Sound company, as well as all other existing obligations of that company."

CHICAGO & NORTH WESTERN.—The Michigan railroad commission has given its consent to the issue of \$10,000,000 equipment trust certificates, the issue of which was approved by the directors some time ago.

OKLAHOMA CENTRAL.—This property, which is in the hands of a receiver, has not as yet been sold under foreclosure, as was stated in the *Railway Age Gazette* of December 27.

TENNESSEE CENTRAL.—On application of S. J. Fordyce, Jr., of St. Louis, vice-president, E. B. Chamberlain, vice-president, and W. K. McAlister, formerly of the supreme court of Tennessee, have been appointed receivers.

UNION PACIFIC.—See editorial comments on page 45.

Attorney General Wickersham has notified the officers of the Union Pacific that he sees no objection to the Union Pacific's receiving the quarterly dividend of 1½ per cent. on its Southern Pacific stock (\$126,650,000).

WABASH-PITTSBURGH TERMINAL.—Judge Orr, on January 3, in the federal court, has authorized the sale of the Wabash-Pittsburgh Terminal at the discretion of the special master, W. H. McClung. The upset price is fixed at \$6,000,000.

WESTERN MARYLAND.—After a meeting of the board of directors on January 7 it was announced that the regular quarterly dividend of 1 per cent. would be passed. E. D. Adams, chairman of the board, representing the Deutsche Bank, in a statement given out after the meeting, said that the directors had provided during the past year \$13,000,000 at a net cost to the company of less than 6 per cent. In part the statement says:

"The Western Maryland system is now in process of transformation and evolution, from a local railway, mainly tributary to and dependent upon the city of Baltimore, to a seaport terminal link in one of the largest railway systems of the country. Such a transformation necessarily involves large increases in operating expenses, alike (1) in the maintenance accounts by reason of the changes required to be made therein under the Interstate Commerce Commission rules in respect to property abandoned or replaced in the course of improvements, (2) in traffic expenses through expenditures necessarily made in advance to promote traffic for the new line, and (3) in transportation expenses by reason of the innumerable difficulties of carrying on construction and improvement work and current traffic simultaneously. In the present case these difficulties have been augmented by the fact that the betterment of the old line did not proceed in due coordination with the construction of the new line.

"The conditions that now obtain are unquestionably abnormal and temporary. Substantial improvement in operating conditions is not, however, to be anticipated until the betterments of the old line are near completion, which may be expected during the latter part of spring, though it is the opinion of the operating officials that October will be found to have been the period of maximum expense."